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Agriculture



Natural  
Resources  
Conservation  
Service

In cooperation with  
Purdue University  
Agricultural Experiment  
Station and Indiana  
Department of Natural  
Resources, Division of Soil  
Conservation and State  
Soil Conservation Board

# Soil Survey of St. Joseph County, Indiana



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# How To Use This Soil Survey

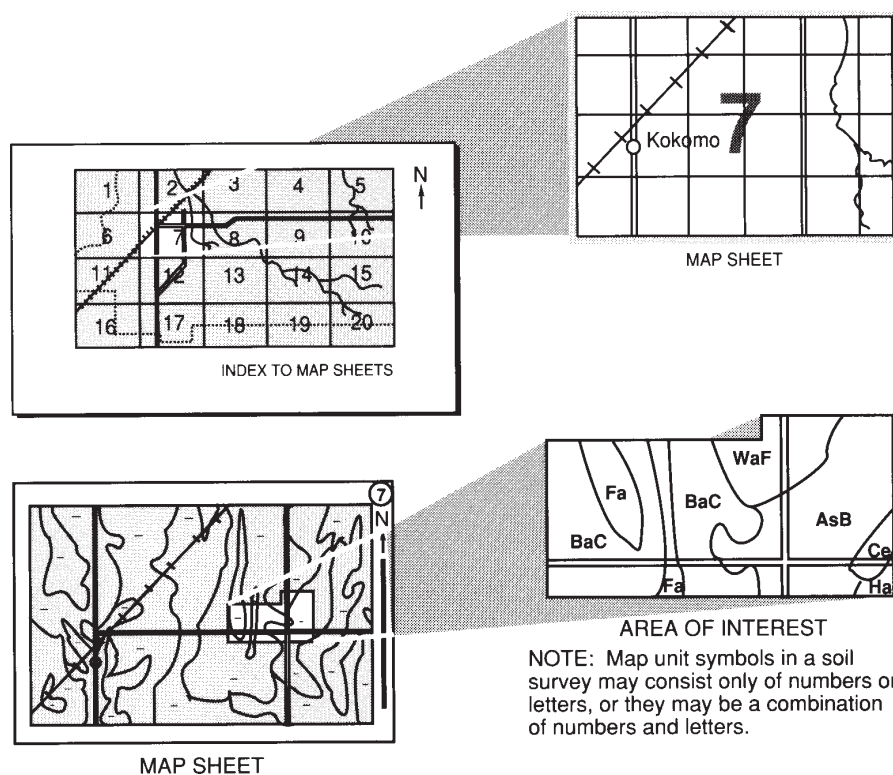
## Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



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This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 2001. Soil names and descriptions were approved in 2001. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2001. This survey was made cooperatively by the Natural Resources Conservation Service; the Purdue University Agricultural Experiment Station; and the Indiana Department of Natural Resources, Division of Soil Conservation and State Soil Conservation Board. This soil survey update is part of the technical assistance provided to the St. Joseph County Soil and Water Conservation District. Financial assistance was provided by the Board of County Commissioners of St. Joseph County and the Polis Center of St. Joseph County.

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**Cover: Soybean stubble and urban development in an area of Tracy sandy loam, 1 to 5 slopes.**

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# Foreword

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This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Jane E. Hardisty  
State Conservationist  
Natural Resources Conservation Service



# Soil Survey of St. Joseph County, Indiana

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Resources, Division of Soil Conservation and State Soil Conservation Board

ST. JOSEPH COUNTY is in the north-central part of Indiana (fig. 1). It has a total area of 295,424 acres, or 467 square miles. The county is bordered on the north by Michigan, on the west by LaPorte County, on the east by Elkhart County, and on the south by Marshall County. South Bend, the county seat, is about 96 miles from Chicago.

About 52 percent of the land in St. Joseph County is highly productive and is used as farmland. The sale of farm products and high value specialty crops is a significant source of revenue in the county. Corn and soybeans are the main crops. Mint, seed corn, hay, vegetables, nursery crops, and Christmas trees also are important as sources of revenue. Dairy cattle, hogs, some beef cattle, and horses are the main varieties of livestock.

The county, which is near the center of the Great Lakes industrial belt, has many industrial and manufacturing firms providing full-time employment to many residents from Indiana and Michigan.

This soil survey updates the survey of St. Joseph County published in 1977 (Benton, 1977). It provides additional information and has larger maps, which show the soils in greater detail.

## General Nature of the Survey Area

This section provides some general information about St. Joseph County. It describes history and development; physiography, relief, and drainage; farming; water resources; trends in population and land use; transportation facilities; schools;

manufacturing and agricultural business services; and climate.

## History and Development

The Potawatomi Indians and some Miami Indians were the original inhabitants of St. Joseph County. The first European explorers were Marquette in 1673 and LaSalle in 1679. Pierre Navarre was the first European settler. He established a trading post in South Bend in 1820. The settlers followed Indian trails in establishing their transportation system.

The county was established by the Indiana State Legislature in 1830. Mishawaka was incorporated as a town in 1834 and South Bend was incorporated in 1835.

## Physiography, Relief, and Drainage

St. Joseph County includes three major land resource areas (MLRAs). The Southwestern Michigan Fruit and Truck Belt (MLRA 97) is in the extreme northwest corner of the county. The Southern Michigan and Northern Indiana Drift Plain (MLRA 98) covers most of the northern and western parts of the county, and the Indiana and Ohio Till Plain (MLRA 111) covers the southeastern part of the county (USDA, 1981). The drainage divide between the Mississippi Basin and the Great Lakes Basin crosses St. Joseph County. About two-thirds of the county drains into the Kankakee River system, which flows to the Mississippi River, and one-third drains into the St. Joseph River system, which flows into Lake Michigan.



Figure 1.—Location of St. Joseph County in Indiana.

## Farming

Farming acres in St. Joseph County have steadily declined over the last few decades. In 1997, St. Joseph County had 666 farms covering 227,874 acres. The average farm size is 231 acres (Gann and Liles, 2000).

Corn and soybeans are the major crops. Specialty crops such as mint, potatoes, onions, and vegetables are an important agricultural commodity in St. Joseph County. Livestock mainly consists of dairy cattle, although many rural families raise horses.

## Water Resources

The St. Joseph River flows west from Elkhart County where it enters Indiana from Michigan. Flowing through Mishawaka and South Bend, it re-enters Michigan just north of South Bend, eventually discharging to Lake Michigan. The Dixon West Place

Ditch (just southwest of South Bend) is the headwaters of the Kankakee River. The Kankakee flows southwest into Illinois.

St. Joseph County has a complex connection of several major unconsolidated aquifer systems made up of thick sand and gravel deposits between larger glacial till deposits. These systems, although highly vulnerable to contamination, also produce one of the most abundant supplies of ground water for drinking, irrigation, and industrial/commercial uses.

Regionally, the flow of the ground water follows the topography and ultimately flows to the rivers and their major tributaries.

## Trends in Population and Land Use

In 1980, St. Joseph County had a population of 241,617. The population increased by 10 percent between 1980 and 2000. The population was 265,559 in 2000.

During the period from 1992 to 1997, the amount of urbanized land increased by about 12 percent and all categories of agricultural land decreased by the same amount (Gann and Liles, 1994; Gann and Liles, 2000). In 1997, 53 percent of the county was used for agricultural purposes. Approximately 3,000 acres of land is being converted to urban uses each year. This trend is expected to continue.

## Transportation Facilities

St. Joseph County is within a highly developed transportation network. The area is served by 6 railroad systems which include 2 passenger railroads (Amtrak and the South Shore) and 4 freight rail services (Grand Trunk Western, Norfolk & Southern, CSX, and South Shore Freight). The St. Joseph County Airport provides major airline service to principal cities of the United States. Major roadways include U.S. Highways 6, 20, 31, and 933; Indiana Highways 2, 4, 23, 104, 123, and 331; the Northern Indiana Tollroad; and Interstate Highways 80 and 90.

## Schools

Six public school systems serve St. Joseph County. In addition, St. Joseph County is served by 2 parochial high schools, 15 private, independent schools, and 7 colleges and universities, including Notre Dame. Population and development trends have been on the increase throughout the county and these schools are addressing ways to increase the capacity of their facilities to accommodate more students.



## Manufacturing and Agricultural Business Services

Throughout the county, several elevators serve the agricultural community by storing and marketing grain, mainly corn and soybeans. Other agriculture-related businesses include equipment, fertilizer, chemical, and seed dealers, as well as the ethanol plant. There are many alternative crops in St. Joseph County including mint, potatoes, seed corn, popcorn, and onions.

The first industries in the county were established in the 1830s. The Studebaker Wagon Works was established in 1852, and other large manufacturing firms were established in later years. In the last few decades, St. Joseph County has moved into the service-oriented work arena. More than 50 percent of the work force holds jobs in service areas such as medical and governmental. More than 16 percent of the work force is employed in retail businesses.

## Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at South Bend in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 26.1 degrees F and the average daily minimum temperature is 18.9 degrees. The lowest temperature on record, which occurred at South Bend on January 19, 1994, was -21 degrees. In summer, the average temperature is 71 degrees and the average daily maximum temperature is 81 degrees. The highest temperature on record, which occurred at South Bend on June 25, 1988, was 104 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is about 39.22 inches. Of this total, about 21.5 inches, or 55 percent, usually falls in May through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 4.69 inches at South Bend on June 25, 1968. Thunderstorms occur on about 42 days each year, and most occur between April and September.

The average seasonal snowfall is around 81 inches. In general, there is slightly more snow on average in

the northern and western portions of the county which are closer to Lake Michigan. The greatest snow depth at any one time during the period of record at South Bend was 41 inches recorded on January 30, 1978. On an average, 72 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 15.6 inches recorded on January 26, 1978.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 82 percent. The sun shines about 66 percent of the time possible in summer and 38 percent in winter. The prevailing wind is from the southwest, except from the north during March and April. Average windspeed is highest, between 11 and 12 miles per hour, from November to April.

## How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of

soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the

soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

## Detailed Soil Map Units

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The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The contrasting components are mentioned in the map unit descriptions under the heading Map Unit Composition. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough

observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit.

Soils that have profiles that are almost alike make up a soil series. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Crosier loam, 0 to 1 percent slopes, is a phase of the Crosier series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes. A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Riddles-Metea complex, 5 to 10 percent slopes, eroded, is an example.

This survey includes miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. The map unit Pits, gravel, is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see Contents) give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

**AahAK—Abscota loamy sand, 0 to 2 percent slopes, occasionally flooded, brief duration**

**Setting**

*Landform:* Flood plains

*Position on the landform:* Backslopes, shoulders, and summits

**Map Unit Composition**

The moderately well drained Abscota and similar soils—80 percent

The poorly drained Cohoctah and similar soils—10 percent

The somewhat poorly drained Waterford and similar soils—7 percent

The poorly drained Gravelton and similar soils—3 percent

**Interpretive Groups**

*Land capability classification:* Abscota—4s

*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Abscota Soil**

*Parent material:* Sandy alluvium

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 4.0 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 3.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* 1.5 feet (January, February, March, April, May, December)

*Frequency of flooding:* Occasional (March, April, May, June)

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and low for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

**AatAN—Ackerman muck, drained, 0 to 1 percent slopes**

**Setting**

*Landform:* Depressions in outwash plains

*Position on the landform:* Footslopes and toeslopes

**Map Unit Composition**

The very poorly drained Ackerman, drained, and similar soils—85 percent

The very poorly drained Moston and similar soils—10 percent

The very poorly drained Antung and similar soils—5 percent

**Interpretive Groups**

*Land capability classification:* Ackerman—4w

*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Ackerman, Drained, Soil**

*Parent material:* Herbaceous organic material over coprogenic material over sandy outwash

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Slow to rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, December)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

**AbhAN—Adrian muck, drained, 0 to 1 percent slopes**

**Setting**

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Toeslopes and footslopes

**Map Unit Composition**

The very poorly drained Adrian, drained, and similar soils—75 percent

The very poorly drained Antung and similar soils—10 percent

The very poorly drained Edwards and similar soils—6 percent

The very poorly drained Houghton and similar soils—6 percent

The very poorly drained Muskego and similar soils—3 percent

**Interpretive Groups**

*Land capability classification:* Adrian—3w

*Prime farmland status:* Farmland of statewide importance

**Properties and Qualities of the Adrian, Drained, Soil**

*Parent material:* Herbaceous organic material over sandy outwash

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Moderately slow to rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 15.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* At the surface (April, May, June)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

**AbhAU—Adrian muck, undrained, 0 to 1 percent slopes****Setting**

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Footslopes and toeslopes

**Map Unit Composition**

The very poorly drained Adrian, undrained, and similar soils—75 percent

The very poorly drained Edwards and similar soils—8 percent

The very poorly drained Houghton and similar soils—7 percent

The very poorly drained Muskego and similar soils—5 percent

Water—5 percent

**Interpretive Groups**

*Land capability classification:* Adrian—5w

*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Adrian, Undrained, Soil**

*Parent material:* Herbaceous organic material over sandy outwash

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Moderately slow to rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 15.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, June, December)

*Frequency of ponding:* Frequent (January, February, March, April, May, June, July, August, October, November, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

**ApuAN—Antung muck, drained, 0 to 1 percent slopes****Setting**

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Footslopes and toeslopes

**Map Unit Composition**

The very poorly drained Antung, drained, and similar soils—75 percent

The very poorly drained Adrian and similar soils—15 percent



The very poorly drained Ackerman and similar soils—  
5 percent

The very poorly drained Madaus and similar soils—  
5 percent

### ***Interpretive Groups***

*Land capability classification:* Antung—3w

*Prime farmland status:* Farmland of statewide importance

### ***Properties and Qualities of the Antung, Drained, Soil***

*Parent material:* Herbaceous organic material over  
sandy outwash

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Moderately slow  
to rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.6 inches to a depth  
of 60 inches

*Content of organic matter in the surface layer:* 40.0 to  
90.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth,  
months):* At the surface (January, February,  
March, December)

*Frequency of ponding:* Frequent (January, February,  
March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and moderate for  
concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **AxvA—Auten loam, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Moraines, outwash plains, and terraces

*Position on the landform:* Summits, shoulders, and  
backslopes

#### ***Map Unit Composition***

The somewhat poorly drained Auten and similar  
soils—82 percent

The somewhat poorly drained Brady and similar  
soils—8 percent

The poorly drained Quinn and similar soils—5 percent

The poorly drained Rensselaer and similar soils—  
5 percent

### ***Interpretive Groups***

*Land capability classification:* Auten—2s

*Prime farmland status:* Prime farmland where drained

### ***Properties and Qualities of the Auten Soil***

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Moderate to rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* 20 to 35 inches to strongly  
contrasting textural stratification

*Available water capacity:* About 6.2 inches to a depth  
of 60 inches

*Content of organic matter in the surface layer:* 2.0 to  
4.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth,  
months):* 0.5 foot (April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and high for  
concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

### **BaaA—Bainter sandy loam, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Outwash plains

*Position on the landform:* Summits, shoulders, and  
backslopes

#### ***Map Unit Composition***

The well drained Bainter and similar soils—85 percent

The somewhat poorly drained Brady and similar  
soils—5 percent

The excessively drained Bristol and similar soils—  
5 percent

The moderately well drained Bronson and similar  
soils—5 percent

### ***Interpretive Groups***

*Land capability classification:* Bainter—3s

*Prime farmland status:* Prime farmland

### ***Properties and Qualities of the Bainter Soil***

*Parent material:* Loamy over sandy outwash

*Drainage class:* Well drained



*Permeability to a depth of 40 inches:* Moderately rapid  
*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.2 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

### **BaaB—Bainter sandy loam, 1 to 4 percent slopes**

#### ***Setting***

*Landform:* Outwash plains

*Position on the landform:* Summits, shoulders, and backslopes

#### ***Map Unit Composition***

The well drained Bainter and similar soils—85 percent

The somewhat poorly drained Brady and similar soils—5 percent

The excessively drained Bristol and similar soils—5 percent

The moderately well drained Bronson and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Bainter—3e

*Prime farmland status:* Prime farmland

#### ***Properties and Qualities of the Bainter Soil***

*Parent material:* Loamy over sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.2 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

### **BaaC2—Bainter sandy loam, 4 to 10 percent slopes, eroded**

#### ***Setting***

*Landform:* Outwash plains

*Position on the landform:* Backslopes

#### ***Map Unit Composition***

The well drained Bainter and similar soils—85 percent

The excessively drained Bristol and similar soils—5 percent

The excessively drained Mishawaka and similar soils—5 percent

The well drained Oshtemo and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Bainter—3e

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Bainter Soil***

*Parent material:* Loamy over sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Moderately high

### **BbmA—Baugo silt loam, 0 to 1 percent slopes**

#### **Setting**

*Landform:* Lake plains and till plains

*Position on the landform:* Backslopes

#### **Map Unit Composition**

The somewhat poorly drained Baugo and similar soils—85 percent

The somewhat poorly drained Brady and similar soils—5 percent

The somewhat poorly drained Del Rey and similar soils—5 percent

The poorly drained Rensselaer and similar soils—5 percent

#### **Interpretive Groups**

*Land capability classification:* Baugo—2w

*Prime farmland status:* Prime farmland where drained

#### **Properties and Qualities of the Baugo Soil**

*Parent material:* Loamy over sandy outwash over loamy till

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Moderate to rapid

*Permeability below a depth of 40 inches:* Slow to rapid

*Depth to restrictive feature:* 50 to 60 inches to dense material

*Available water capacity:* About 6.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 0.5 foot (March, April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

### **BmgA—Blount silt loam, 0 to 2 percent slopes**

#### **Setting**

*Landform:* Till plains

*Position on the landform:* Summits, shoulders, and backslopes

#### **Map Unit Composition**

The somewhat poorly drained Blount and similar soils—85 percent

The moderately well drained Glynwood and similar soils—6 percent

The poorly drained Pewamo and similar soils—4 percent

The poorly drained Milford and similar soils—3 percent

The moderately well drained Morley and similar soils—2 percent

#### **Interpretive Groups**

*Land capability classification:* Blount—2w

*Prime farmland status:* Prime farmland where drained

#### **Properties and Qualities of the Blount Soil**

*Parent material:* Loamy till over loamy basal till

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Slow to moderate

*Permeability below a depth of 40 inches:* Slow

*Depth to restrictive feature:* 30 to 50 inches to dense material

*Available water capacity:* About 8.8 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 0.5 foot (March, April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

### **BshA—Brady sandy loam, 0 to 1 percent slopes**

#### **Setting**

*Landform:* Outwash plains and outwash terraces

*Position on the landform:* Summits, shoulders, and backslopes

#### **Map Unit Composition**

The somewhat poorly drained Brady and similar soils—90 percent

The poorly drained Gilford and similar soils—4 percent

The moderately well drained Brems and similar soils—3 percent

The somewhat poorly drained Morocco and similar soils—3 percent

### ***Interpretive Groups***

*Land capability classification:* Brady—2w

*Prime farmland status:* Prime farmland where drained

#### ***Properties and Qualities of the Brady Soil***

*Parent material:* Loamy outwash over sandy and gravelly outwash

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Moderately rapid

*Permeability below a depth of 40 inches:* Moderately rapid or rapid

*Depth to restrictive feature:* 40 to 70 inches to strongly contrasting textural stratification

*Available water capacity:* About 7.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 4.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

### **BsxA—Brems-Morocco loamy sands, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Outwash plains

*Position on the landform:* Summits, shoulders, and backslopes

#### ***Map Unit Composition***

The moderately well drained Brems and similar soils—50 percent

The somewhat poorly drained Morocco and similar soils—40 percent

The somewhat poorly drained Brady and similar soils—5 percent

The well drained Osolo and similar soils—5 percent

### ***Interpretive Groups***

*Land capability classification:* Brems—4s; Morocco—4s

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Brems Soil***

*Parent material:* Sandy outwash

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 5.3 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 1.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* 2.0 feet (January, February, March, April, May, October, November, December)

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### ***Properties and Qualities of the Morocco Soil***

*Parent material:* Sandy outwash

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 5.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (April)

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **BteA—Brems loamy sand, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Outwash plains

*Position on the landform:* Summits, shoulders, and backslopes

#### ***Map Unit Composition***

The moderately well drained Brems and similar soils—80 percent

The well drained Osolo and similar soils—8 percent

The somewhat poorly drained Morocco and similar soils—7 percent

The excessively drained Tyner and similar soils—  
5 percent

### ***Interpretive Groups***

*Land capability classification:* Brems—4s

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Brems Soil***

*Parent material:* Sandy outwash

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 5.3 inches to a depth  
of 60 inches

*Content of organic matter in the surface layer:* 0.5 to  
1.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth,  
months):* 2.0 feet (January, February, March, April,  
May, October, November, December)

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

## **BuuA—Brookston loam, 0 to 1 percent slopes**

### ***Setting***

*Landform:* Depressions in outwash plains and till  
plains

*Position on the landform:* Toeslopes and footslopes

### ***Map Unit Composition***

The poorly drained Brookston and similar soils—  
80 percent

The somewhat poorly drained Crosier and similar  
soils—8 percent

The poorly drained Rensselaer and similar soils—  
8 percent

The poorly drained Goodell and similar soils—  
4 percent

### ***Interpretive Groups***

*Land capability classification:* Brookston—2w

*Prime farmland status:* Prime farmland where drained

### ***Properties and Qualities of the Brookston Soil***

*Parent material:* Fine-loamy till

*Drainage class:* Poorly drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderately  
slow to moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 9.8 inches to a depth  
of 60 inches

*Content of organic matter in the surface layer:* 3.0 to  
5.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth,  
months):* At the surface (April, May)

*Frequency of ponding:* Frequent (January, February,  
March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

## **CmbAl—Cohoctah loam, 0 to 1 percent slopes, frequently flooded, brief duration**

### ***Setting***

*Landform:* Flood plains

*Position on the landform:* Shoulders, summits, and  
backslopes

### ***Map Unit Composition***

The poorly drained Cohoctah and similar soils—  
75 percent

The poorly drained Suman and similar soils—  
10 percent

The moderately well drained Abscota and similar  
soils—5 percent

The very poorly drained Adrian and similar soils—  
5 percent

The somewhat poorly drained Ceresco and similar  
soils—5 percent

### ***Interpretive Groups***

*Land capability classification:* Cohoctah—4w

*Prime farmland status:* Prime farmland where  
drained and either protected from flooding or  
not frequently flooded during the growing  
season

### ***Properties and Qualities of the Cohoctah Soil***

*Parent material:* Coarse-loamy alluvium

*Drainage class:* Poorly drained

*Permeability to a depth of 40 inches:* Moderately rapid



*Permeability below a depth of 40 inches:* Moderately rapid or rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 10.3 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 3.0 to 6.0 percent  
*Shrink-swell potential:* Low  
*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April)  
*Frequency of flooding:* Frequent (January, February, March, April, May, November, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and low for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **CnbA—Coloma sand, 0 to 2 percent slopes**

#### ***Setting***

*Landform:* Moraines and outwash plains  
*Position on the landform:* Backslopes, summits, and shoulders

#### ***Map Unit Composition***

The somewhat excessively drained Coloma and similar soils—85 percent  
 The excessively drained Bristol and similar soils—5 percent  
 The well drained Osolo and similar soils—5 percent  
 The excessively drained Tyner and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Coloma—4s  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Coloma Soil***

*Parent material:* Sandy outwash  
*Drainage class:* Somewhat excessively drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Moderately rapid or rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 4.8 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Low  
*Hazard of corrosion:* Low for steel and moderate for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Very high

### **CnbB—Coloma sand, 2 to 5 percent slopes**

#### ***Setting***

*Landform:* Moraines and outwash plains  
*Position on the landform:* Summits, shoulders, and backslopes

#### ***Map Unit Composition***

The somewhat excessively drained Coloma and similar soils—85 percent  
 The excessively drained Bristol and similar soils—5 percent  
 The well drained Osolo and similar soils—5 percent  
 The excessively drained Tyner and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Coloma—4s  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Coloma Soil***

*Parent material:* Sandy outwash  
*Drainage class:* Somewhat excessively drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Moderately rapid or rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 4.8 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 2.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Low  
*Hazard of corrosion:* Low for steel and moderate for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Very high

### **CnbC—Coloma sand, 5 to 10 percent slopes**

#### **Setting**

*Landform:* Moraines and outwash plains

*Position on the landform:* Backslopes

#### **Map Unit Composition**

The somewhat excessively drained Coloma and similar soils—85 percent

The excessively drained Bristol and similar soils—10 percent

The excessively drained Tyner and similar soils—4 percent

The well drained Osolo and similar soils—1 percent

#### **Interpretive Groups**

*Land capability classification:* Coloma—6s

*Prime farmland status:* Not prime farmland

#### **Properties and Qualities of the Coloma Soil**

*Parent material:* Sandy outwash

*Drainage class:* Somewhat excessively drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Moderately rapid or rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 4.8 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Very high

### **CnbD—Coloma sand, 10 to 18 percent slopes**

#### **Setting**

*Landform:* Moraines and outwash plains

*Position on the landform:* Backslopes

#### **Map Unit Composition**

The somewhat excessively drained Coloma and similar soils—85 percent

The excessively drained Tyner and similar soils—8 percent

The excessively drained Bristol and similar soils—7 percent

#### **Interpretive Groups**

*Land capability classification:* Coloma—6s

*Prime farmland status:* Not prime farmland

#### **Properties and Qualities of the Coloma Soil**

*Parent material:* Sandy outwash

*Drainage class:* Somewhat excessively drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Moderately rapid or rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 4.8 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Very high

### **CrrA—Coupee silt loam, 0 to 1 percent slopes**

#### **Setting**

*Landform:* Outwash plains

*Position on the landform:* Summits, shoulders, and backslopes

#### **Map Unit Composition**

The well drained Coupee and similar soils—85 percent

The somewhat poorly drained Auten and similar soils—5 percent

The well drained Door and similar soils—5 percent

The well drained Tracy and similar soils—5 percent

#### **Interpretive Groups**

*Land capability classification:* Coupee—2s

*Prime farmland status:* Prime farmland

#### **Properties and Qualities of the Coupee Soil**

*Parent material:* Loamy outwash

*Drainage class:* Well drained



*Permeability to a depth of 40 inches:* Moderate to rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* 30 to 40 inches to strongly contrasting textural stratification  
*Available water capacity:* About 8.6 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 2.0 to 4.0 percent  
*Shrink-swell potential:* Moderate  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and high for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **CvdA—Crosier loam, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Till plains  
*Position on the landform:* Summits, shoulders, and backslopes

#### ***Map Unit Composition***

The somewhat poorly drained Crosier and similar soils—85 percent  
 The poorly drained Brookston and similar soils—5 percent  
 The somewhat poorly drained Selfridge and similar soils—5 percent  
 The moderately well drained Williamstown and similar soils—3 percent  
 The somewhat poorly drained Baugo and similar soils—2 percent

#### ***Interpretive Groups***

*Land capability classification:* Crosier—2w  
*Prime farmland status:* Prime farmland where drained

#### ***Properties and Qualities of the Crosier Soil***

*Parent material:* Loamy till over loamy basal till  
*Drainage class:* Somewhat poorly drained  
*Permeability to a depth of 40 inches:* Slow to moderate  
*Permeability below a depth of 40 inches:* Slow  
*Depth to restrictive feature:* 24 to 40 inches to dense material  
*Available water capacity:* About 6.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Moderate  
*Perched seasonal high water table is highest (depth, months):* 0.5 foot (March, April)  
*Hydric soil status:* Not hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and low for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **CvdB—Crosier loam, 1 to 4 percent slopes**

#### ***Setting***

*Landform:* Till plains  
*Position on the landform:* Summits, shoulders, and backslopes

#### ***Map Unit Composition***

The somewhat poorly drained Crosier and similar soils—80 percent  
 The poorly drained Brookston and similar soils—10 percent  
 The somewhat poorly drained Selfridge and similar soils—5 percent  
 The well drained Riddles and similar soils—4 percent  
 The somewhat poorly drained Baugo and similar soils—1 percent

#### ***Interpretive Groups***

*Land capability classification:* Crosier—2e  
*Prime farmland status:* Prime farmland where drained

#### ***Properties and Qualities of the Crosier Soil***

*Parent material:* Loamy till over loamy basal till  
*Drainage class:* Somewhat poorly drained  
*Permeability to a depth of 40 inches:* Slow to moderate  
*Permeability below a depth of 40 inches:* Slow  
*Depth to restrictive feature:* 24 to 40 inches to dense material  
*Available water capacity:* About 6.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Moderate  
*Perched seasonal high water table is highest (depth, months):* 0.5 foot (March, April)  
*Hydric soil status:* Not hydric  
*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Low

### **CwkA—Crumstown fine sandy loam, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Ground moraines

*Position on the landform:* Summits, shoulders, and backslopes

#### ***Map Unit Composition***

The well drained Crumstown and similar soils—80 percent

The well drained Oshtemo and similar soils—8 percent

The moderately well drained Bronson and similar soils—7 percent

The somewhat poorly drained Brady and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Crumstown—3s

*Prime farmland status:* Prime farmland

#### ***Properties and Qualities of the Crumstown Soil***

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 5.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* 3.5 feet (January, February, March, April, May, October, November, December)

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

### **CwkB—Crumstown fine sandy loam, 1 to 5 percent slopes**

#### ***Setting***

*Landform:* Ground moraines

*Position on the landform:* Summits, shoulders, and backslopes

#### ***Map Unit Composition***

The well drained Crumstown and similar soils—80 percent

The well drained Oshtemo and similar soils—8 percent

The moderately well drained Bronson and similar soils—7 percent

The somewhat poorly drained Brady and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Crumstown—3e

*Prime farmland status:* Prime farmland

#### ***Properties and Qualities of the Crumstown Soil***

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 5.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* 3.5 feet (January, February, March, April, May, October, November, December)

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

**DcrA—Del Rey silty clay loam, 0 to 1 percent slopes****Setting**

*Landform:* Lake plains

*Position on the landform:* Summits, shoulders, and backslopes

**Map Unit Composition**

The somewhat poorly drained Del Rey and similar soils—85 percent

The somewhat poorly drained Baugo and similar soils—5 percent

The poorly drained Milford and similar soils—5 percent

The somewhat poorly drained Whitaker and similar soils—5 percent

**Interpretive Groups**

*Land capability classification:* Del Rey—2w

*Prime farmland status:* Prime farmland

**Properties and Qualities of the Del Rey Soil**

*Parent material:* Clayey lacustrine deposits

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Slow to moderate

*Permeability below a depth of 40 inches:* Slow

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 0.5 foot (March, April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* High

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

**EchAN—Edwards muck, drained, 0 to 1 percent slopes****Setting**

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Toeslopes and footslopes

**Map Unit Composition**

The very poorly drained Edwards, drained, and similar soils—80 percent

The very poorly drained Madaus and similar soils—8 percent

The very poorly drained Houghton and similar soils—7 percent

The very poorly drained Adrian and similar soils—5 percent

**Interpretive Groups**

*Land capability classification:* Edwards—4w

*Prime farmland status:* Farmland of statewide importance

**Properties and Qualities of the Edwards, Drained, Soil**

*Parent material:* Herbaceous organic material over marl

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Slow to moderately rapid

*Permeability below a depth of 40 inches:* Slow

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 9.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* At the surface (April, May, June)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

**EchAU—Edwards muck, undrained, 0 to 1 percent slopes****Setting**

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Footslopes and toeslopes

**Map Unit Composition**

The very poorly drained Edwards, undrained, and similar soils—75 percent  
 The very poorly drained Madaus and similar soils—8 percent  
 The very poorly drained Houghton and similar soils—7 percent  
 The very poorly drained Adrian and similar soils—5 percent  
 Water—5 percent

**Interpretive Groups**

*Land capability classification:* Edwards—5w

*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Edwards, Undrained, Soil**

*Parent material:* Herbaceous organic material over marl

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Slow to moderately rapid

*Permeability below a depth of 40 inches:* Slow

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 9.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, June, December)

*Frequency of ponding:* Frequent (January, February, March, April, May, June, July, August, October, November, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

**EcrAN—Edselton muck, drained, 0 to 1 percent slopes****Setting**

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Footslopes and toeslopes

**Map Unit Composition**

The very poorly drained Edselton, drained, and similar soils—70 percent  
 The very poorly drained Edwards and similar soils—10 percent  
 The very poorly drained Madaus and similar soils—10 percent  
 The very poorly drained Adrian and similar soils—5 percent  
 The very poorly drained Houghton and similar soils—5 percent

**Interpretive Groups**

*Land capability classification:* Edselton—4w

*Prime farmland status:* Farmland of statewide importance

**Properties and Qualities of the Edselton, Drained, Soil**

*Parent material:* Herbaceous organic material over marl over sandy outwash

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Slow to moderately rapid

*Permeability below a depth of 40 inches:* Slow to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 9.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

**EcrAU—Edselton muck, undrained, 0 to 1 percent slopes****Setting**

*Landform:* Depressions on lake plains, outwash plains, and till plains

*Position on the landform:* Footslopes and toeslopes

**Map Unit Composition**

The very poorly drained Edselton, undrained, and similar soils—70 percent  
 The very poorly drained Madaus and similar soils—10 percent  
 The very poorly drained Adrian and similar soils—5 percent  
 The very poorly drained Edwards and similar soils—5 percent  
 The very poorly drained Houghton and similar soils—5 percent  
 Water—5 percent

**Interpretive Groups**

*Land capability classification:* Edselton—5w  
*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Edselton, Undrained, Soil**

*Parent material:* Herbaceous organic material over marl over sandy outwash  
*Drainage class:* Very poorly drained  
*Permeability to a depth of 40 inches:* Slow to moderately rapid  
*Permeability below a depth of 40 inches:* Slow to rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 9.1 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 40.0 to 90.0 percent  
*Shrink-swell potential:* Low  
*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, June, September, October, November, December)  
*Frequency of ponding:* Frequent (January, February, March, April, May, June, July, August, October, November, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and low for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High

**EmeA—Elston sandy loam, 0 to 1 percent slopes****Setting**

*Landform:* Outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

**Map Unit Composition**

The well drained Elston and similar soils—85 percent  
 The well drained Bainter and similar soils—5 percent  
 The excessively drained Mishawaka and similar soils—5 percent  
 The well drained Schoolcraft and similar soils—5 percent

**Interpretive Groups**

*Land capability classification:* Elston—2s  
*Prime farmland status:* Prime farmland

**Properties and Qualities of the Elston Soil**

*Parent material:* Loamy over sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.1 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 2.0 to 4.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and moderate for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

**GczA—Gilford sandy loam, 0 to 1 percent slopes****Setting**

*Landform:* Depressions in drainageways and outwash plains  
*Position on the landform:* Footslopes and toeslopes

**Map Unit Composition**

The poorly drained Gilford and similar soils—75 percent  
 The poorly drained Sebewa and similar soils—10 percent  
 The poorly drained Rensselaer and similar soils—8 percent



The somewhat poorly drained Brady and similar soils—7 percent

### ***Interpretive Groups***

*Land capability classification:* Gilford—2w

*Prime farmland status:* Prime farmland where drained

### ***Properties and Qualities of the Gilford Soil***

*Parent material:* Coarse-loamy outwash over sandy outwash

*Drainage class:* Poorly drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 6.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 4.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

## **GdnA—Gilford mucky sandy loam, 0 to 1 percent slopes**

### ***Setting***

*Landform:* Depressions in outwash plains

*Position on the landform:* Footslopes and toeslopes

### ***Map Unit Composition***

The very poorly drained Gilford and similar soils—75 percent

The poorly drained Sebewa and similar soils—10 percent

The poorly drained Rensselaer and similar soils—8 percent

The very poorly drained Adrian and similar soils—7 percent

### ***Interpretive Groups***

*Land capability classification:* Gilford—2w

*Prime farmland status:* Prime farmland where drained

## ***Properties and Qualities of the Gilford Soil***

*Parent material:* Loamy over sandy outwash

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 6.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 10.0 to 15.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

## **HfbAN—Henrietta muck, drained, 0 to 1 percent slopes**

### ***Setting***

*Landform:* Depressions in outwash plains

*Position on the landform:* Footslopes and toeslopes

### ***Map Unit Composition***

The very poorly drained Henrietta, drained, and similar soils—80 percent

The very poorly drained Adrian and similar soils—5 percent

The very poorly drained Antung and similar soils—5 percent

The very poorly drained Madaus and similar soils—5 percent

The very poorly drained Palms and similar soils—5 percent

### ***Interpretive Groups***

*Land capability classification:* Henrietta—2w

*Prime farmland status:* Farmland of statewide importance

## ***Properties and Qualities of the Henrietta, Drained, Soil***

*Parent material:* Herbaceous organic material over loamy and/or sandy drift



*Drainage class:* Very poorly drained  
*Permeability to a depth of 40 inches:* Moderately slow to moderately rapid  
*Permeability below a depth of 40 inches:* Moderate  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 12.2 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 40.0 to 90.0 percent  
*Shrink-swell potential:* Low  
*Apparent seasonal high water table is highest (depth, months):* At the surface (April, May, June)  
*Frequency of ponding:* Frequent (January, February, March, April, May, November, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and moderate for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High

### **HfbAU—Henrietta muck, undrained, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Depressions in outwash plains  
*Position on the landform:* Footslopes and toeslopes

#### ***Map Unit Composition***

The very poorly drained Henrietta, undrained, and similar soils—75 percent  
 The very poorly drained Adrian and similar soils—5 percent  
 The very poorly drained Antung and similar soils—5 percent  
 The very poorly drained Madaus and similar soils—5 percent  
 The very poorly drained Palms and similar soils—5 percent  
 Water—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Henrietta—5w  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Henrietta, Undrained, Soil***

*Parent material:* Herbaceous organic material over loamy and/or sandy drift  
*Drainage class:* Very poorly drained  
*Permeability to a depth of 40 inches:* Moderately slow to moderately rapid

*Permeability below a depth of 40 inches:* Moderate  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 12.2 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 40.0 to 90.0 percent  
*Shrink-swell potential:* Low  
*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, June, December)  
*Frequency of ponding:* Frequent (January, February, March, April, May, June, July, August, October, November, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and moderate for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High

### **Hkka—Hillsdale sandy loam, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* End moraines  
*Position on the landform:* Summits, shoulders, and backslopes

#### ***Map Unit Composition***

The well drained Hillsdale and similar soils—80 percent  
 The well drained Oshtemo and similar soils—10 percent  
 The well drained Riddles and similar soils—5 percent  
 The excessively drained Tyner and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Hillsdale—2e  
*Prime farmland status:* Prime farmland

#### ***Properties and Qualities of the Hillsdale Soil***

*Parent material:* Coarse-loamy till  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Moderate or moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

### **HkkB—Hillsdale sandy loam, 1 to 5 percent slopes**

#### **Setting**

*Landform:* End moraines  
*Position on the landform:* Summits, shoulders, and backslopes

#### **Map Unit Composition**

The well drained Hillsdale and similar soils—80 percent  
 The well drained Oshtemo and similar soils—10 percent  
 The well drained Riddles and similar soils—5 percent  
 The excessively drained Tyner and similar soils—5 percent

#### **Interpretive Groups**

*Land capability classification:* Hillsdale—2s  
*Prime farmland status:* Prime farmland

#### **Properties and Qualities of the Hillsdale Soil**

*Parent material:* Coarse-loamy till  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Moderate or moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

### **HknC2—Hillsdale-Oshtemo sandy loams, 5 to 10 percent slopes, eroded**

#### **Setting**

*Landform:* End moraines  
*Position on the landform:* Backslopes

#### **Map Unit Composition**

The well drained Hillsdale and similar soils—55 percent  
 The well drained Oshtemo and similar soils—30 percent  
 The excessively drained Tyner and similar soils—8 percent  
 The well drained Riddles and similar soils—7 percent

#### **Interpretive Groups**

*Land capability classification:* Hillsdale—3e;  
 Oshtemo—3e  
*Prime farmland status:* Not prime farmland

#### **Properties and Qualities of the Hillsdale Soil**

*Parent material:* Coarse-loamy till  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Moderate or moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.6 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

#### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

### **HknD2—Hillsdale-Oshtemo sandy loams, 10 to 18 percent slopes, eroded**

#### ***Setting***

*Landform:* End moraines  
*Position on the landform:* Backslopes

#### ***Map Unit Composition***

The well drained Hillsdale and similar soils—55 percent  
 The well drained Oshtemo and similar soils—30 percent  
 The excessively drained Tyner and similar soils—8 percent  
 The well drained Riddles and similar soils—7 percent

#### ***Interpretive Groups***

*Land capability classification:* Hillsdale—4e;  
 Oshtemo—4e  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Hillsdale Soil***

*Parent material:* Coarse-loamy till  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Moderate or moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.6 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

#### ***Properties and Qualities of the Oshtemo Soil***

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

### **HkpC2—Hillsdale-Tracy sandy loams, 5 to 10 percent slopes, eroded**

#### ***Setting***

*Landform:* End moraines  
*Position on the landform:* Backslopes

#### ***Map Unit Composition***

The well drained Hillsdale and similar soils—55 percent  
 The well drained Tracy and similar soils—30 percent  
 The excessively drained Tyner and similar soils—8 percent  
 The well drained Riddles and similar soils—7 percent

#### ***Interpretive Groups***

*Land capability classification:* Hillsdale—3e; Tracy—3e  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Hillsdale Soil***

*Parent material:* Coarse-loamy till  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Moderate or moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.6 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

### **Properties and Qualities of the Tracy Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate  
*Permeability below a depth of 40 inches:* Moderate to rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.5 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and moderate for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

## **HkpD2—Hillsdale-Tracy sandy loams, 10 to 18 percent slopes, eroded**

### **Setting**

*Landform:* End moraines  
*Position on the landform:* Backslopes

### **Map Unit Composition**

The well drained Hillsdale and similar soils—55 percent  
 The well drained Tracy and similar soils—30 percent  
 The excessively drained Tyner and similar soils—8 percent  
 The well drained Riddles and similar soils—7 percent

### **Interpretive Groups**

*Land capability classification:* Hillsdale—4e; Tracy—4e  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Hillsdale Soil**

*Parent material:* Coarse-loamy till

*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Moderate or moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.6 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

### **Properties and Qualities of the Tracy Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate  
*Permeability below a depth of 40 inches:* Moderate to rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.5 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and moderate for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* High  
*Susceptibility to wind erosion:* Moderately high

## **HtbAN—Houghton muck, drained, 0 to 1 percent slopes**

### **Setting**

*Landform:* Depressions in lake plains, outwash plains, and till plains  
*Position on the landform:* Toeslopes and footslopes

### **Map Unit Composition**

The very poorly drained Houghton, drained, and similar soils—75 percent



The very poorly drained Adrian and similar soils—  
7 percent  
The very poorly drained Edwards and similar soils—  
7 percent  
The very poorly drained Muskego and similar soils—  
6 percent  
The very poorly drained Palms and similar soils—  
5 percent

### ***Interpretive Groups***

*Land capability classification:* Houghton—3w  
*Prime farmland status:* Farmland of statewide  
importance

### ***Properties and Qualities of the Houghton, Drained, Soil***

*Parent material:* Herbaceous organic material  
*Drainage class:* Very poorly drained  
*Permeability to a depth of 40 inches:* Moderately slow  
to moderately rapid  
*Permeability below a depth of 40 inches:* Moderately  
slow to moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 23.9 inches to a depth  
of 60 inches  
*Content of organic matter in the surface layer:* 40.0 to  
90.0 percent  
*Shrink-swell potential:* Not rated  
*Apparent seasonal high water table is highest (depth,  
months):* At the surface (April, May, June)  
*Frequency of ponding:* Frequent (January, February,  
March, April, May, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and moderate for  
concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High

### **HtbAU—Houghton muck, undrained, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Depressions in lake plains, outwash plains,  
and till plains  
*Position on the landform:* Footslopes and toeslopes

#### ***Map Unit Composition***

The very poorly drained Houghton, undrained, and  
similar soils—75 percent  
The very poorly drained Adrian and similar soils—  
5 percent

The very poorly drained Edwards and similar soils—  
5 percent  
The very poorly drained Muskego and similar soils—  
5 percent  
The very poorly drained Palms and similar soils—  
5 percent  
Water—5 percent

### ***Interpretive Groups***

*Land capability classification:* Houghton—5w  
*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Houghton, Undrained, Soil***

*Parent material:* Herbaceous organic material  
*Drainage class:* Very poorly drained  
*Permeability to a depth of 40 inches:* Moderately slow  
to moderately rapid  
*Permeability below a depth of 40 inches:* Moderately  
slow to moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 23.9 inches to a depth  
of 60 inches  
*Content of organic matter in the surface layer:* 40.0 to  
90.0 percent  
*Shrink-swell potential:* Not rated  
*Apparent seasonal high water table is highest (depth,  
months):* At the surface (January, February,  
March, April, May, June, July, August, December)  
*Frequency of ponding:* Frequent (January, February,  
March, April, May, June, July, August, October,  
November, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and moderate for  
concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High

### **JaaAK—Jamestown silt loam, 0 to 1 percent slopes, occasionally flooded, brief duration**

#### ***Setting***

*Landform:* Flood plains  
*Position on the landform:* Footslopes

#### ***Map Unit Composition***

The somewhat poorly drained Jamestown and similar  
soils—80 percent  
The somewhat poorly drained Waterford and similar  
soils—10 percent



The poorly drained Brookston and similar soils—  
5 percent

The poorly drained Southwest and similar soils—  
5 percent

### ***Interpretive Groups***

*Land capability classification:* Jamestown—2w

*Prime farmland status:* Prime farmland where drained

### ***Properties and Qualities of the Jamestown Soil***

*Parent material:* Loamy alluvium over loamy basal till

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Moderate or  
moderately rapid

*Permeability below a depth of 40 inches:* Very slow to  
rapid

*Depth to restrictive feature:* 42 to 70 inches to dense  
material

*Available water capacity:* About 9.1 inches to a depth  
of 60 inches

*Content of organic matter in the surface layer:* 2.0 to  
4.0 percent

*Shrink-swell potential:* Low

*Perched seasonal high water table is highest (depth,  
months):* 0.5 foot (April, May, June)

*Frequency of flooding:* Occasional (January, February,  
March, April, May, June, July, August, September,  
October, November, December)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

### **MfaA—Martinsville loam, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Outwash plains and till plains

*Position on the landform:* Shoulders, backslopes, and  
summits

#### ***Map Unit Composition***

The well drained Martinsville and similar soils—  
70 percent

The well drained Crumstown and similar soils—  
10 percent

The well drained Oshtemo and similar soils—  
10 percent

The well drained Riddles and similar soils—10 percent

### ***Interpretive Groups***

*Land capability classification:* Martinsville—1

*Prime farmland status:* Prime farmland

### ***Properties and Qualities of the Martinsville Soil***

*Parent material:* Loamy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 9.2 inches to a depth  
of 60 inches

*Content of organic matter in the surface layer:* 1.0 to  
2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet  
all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate  
for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

### **MfaB2—Martinsville loam, 1 to 5 percent slopes, eroded**

#### ***Setting***

*Landform:* Outwash plains and till plains

*Position on the landform:* Backslopes, shoulders, and  
summits

#### ***Map Unit Composition***

The well drained Martinsville and similar soils—  
70 percent

The well drained Crumstown and similar soils—  
10 percent

The well drained Oshtemo and similar soils—  
10 percent

The well drained Riddles and similar soils—10 percent

### ***Interpretive Groups***

*Land capability classification:* Martinsville—2e

*Prime farmland status:* Prime farmland

### ***Properties and Qualities of the Martinsville Soil***

*Parent material:* Loamy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.6 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Moderate  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and moderate for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Low

### **MfaC2—Martinsville loam, 5 to 10 percent slopes, eroded**

#### ***Setting***

*Landform:* Outwash plains and till plains  
*Position on the landform:* Backslopes

#### ***Map Unit Composition***

The well drained Martinsville and similar soils—80 percent  
 The well drained Oshtemo and similar soils—10 percent  
 The well drained Riddles and similar soils—10 percent

#### ***Interpretive Groups***

*Land capability classification:* Martinsville—3e  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Martinsville Soil***

*Parent material:* Loamy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate  
*Permeability below a depth of 40 inches:* Moderate  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.6 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Moderate  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Low

### **MfrAN—Madaus muck, drained, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Depressions in lake plains, outwash plains, and till plains  
*Position on the landform:* Toeslopes and footslopes

#### ***Map Unit Composition***

The very poorly drained Madaus, drained, and similar soils—80 percent  
 The very poorly drained Edselton and similar soils—10 percent  
 The very poorly drained Moston and similar soils—10 percent

#### ***Interpretive Groups***

*Land capability classification:* Madaus—4w  
*Prime farmland status:* Farmland of statewide importance

#### ***Properties and Qualities of the Madaus, Drained, Soil***

*Parent material:* Herbaceous organic material over marl over sandy outwash  
*Drainage class:* Very poorly drained  
*Permeability to a depth of 40 inches:* Slow to moderately rapid  
*Permeability below a depth of 40 inches:* Slow to rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 4.6 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 40.0 to 90.0 percent  
*Shrink-swell potential:* Low  
*Apparent seasonal high water table is highest (depth, months):* At the surface (April, May, June)  
*Frequency of ponding:* Frequent (January, February, March, April, May, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and low for concrete  
*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **MfrAU—Madaus muck, undrained, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Footslopes and toeslopes

#### ***Map Unit Composition***

The very poorly drained Madaus, undrained, and similar soils—75 percent

The very poorly drained Edselton and similar soils—10 percent

The very poorly drained Moston and similar soils—10 percent

Water—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Madaus—5w

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Madaus, Undrained, Soil***

*Parent material:* Herbaceous organic material over marl over sandy outwash

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Slow to moderately rapid

*Permeability below a depth of 40 inches:* Slow to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 4.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, June, September, October, November, December)

*Frequency of ponding:* Frequent (January, February, March, April, May, June, July, August, October, November, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **MgcA—Maumee loamy sand, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Depressions in lake plains and outwash plains

*Position on the landform:* Toeslopes and footslopes

#### ***Map Unit Composition***

The poorly drained Maumee and similar soils—80 percent

The poorly drained Granby and similar soils—10 percent

The poorly drained Gilford and similar soils—7 percent

The somewhat poorly drained Morocco and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Maumee—3w

*Prime farmland status:* Farmland of statewide importance

#### ***Properties and Qualities of the Maumee Soil***

*Parent material:* Sandy outwash

*Drainage class:* Poorly drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 5.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 4.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (January, February, March, October, November, December)

*Frequency of ponding:* Frequent (January, February, March, April, May, November, December)

*Hydric soil status:* Hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **MgdAN—Martisco muck, drained, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Footslopes and toeslopes

### **Map Unit Composition**

The very poorly drained Martisco, drained, and similar soils—75 percent  
 The very poorly drained Edselton and similar soils—10 percent  
 The very poorly drained Madaus and similar soils—10 percent  
 The very poorly drained Moston and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Martisco—4w

*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Martisco, Drained, Soil**

*Parent material:* Herbaceous organic material over marl

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Slow to moderately rapid

*Permeability below a depth of 40 inches:* Slow

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 4.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and high for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **MhaA—Maumee loamy fine sand, 0 to 1 percent slopes**

#### **Setting**

*Landform:* Depressions in outwash plains

*Position on the landform:* Toeslopes and footslopes

### **Map Unit Composition**

The poorly drained Maumee and similar soils—80 percent

The poorly drained Gilford and similar soils—5 percent

The poorly drained Gumz and similar soils—5 percent

The somewhat poorly drained Morocco and similar soils—5 percent

The poorly drained Newton and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Maumee—3w

*Prime farmland status:* Farmland of statewide importance

### **Properties and Qualities of the Maumee Soil**

*Parent material:* Sandy outwash

*Drainage class:* Poorly drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 5.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 4.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, December)

*Frequency of ponding:* Frequent (January, February, March, April, May, November, December)

*Hydric soil status:* Hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **MhbA—Maumee mucky loamy fine sand, 0 to 1 percent slopes**

#### **Setting**

*Landform:* Depressions in outwash plains

*Position on the landform:* Toeslopes and footslopes

### **Map Unit Composition**

The very poorly drained Maumee and similar soils—90 percent

The poorly drained Gilford and similar soils—5 percent

The poorly drained Granby and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Maumee—3w

*Prime farmland status:* Farmland of statewide importance



**Properties and Qualities of the Maumee Soil**

*Parent material:* Sandy outwash  
*Drainage class:* Very poorly drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 5.5 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 10.0 to 20.0 percent  
*Shrink-swell potential:* Low  
*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, December)  
*Frequency of ponding:* Frequent (January, February, March, April, May, November, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* High for steel and moderate for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High

**MmbC2—Miami loam, 5 to 10 percent slopes, eroded****Setting**

*Landform:* Moraines  
*Position on the landform:* Backslopes and shoulders

**Map Unit Composition**

The moderately well drained Miami and similar soils—80 percent  
 The well drained Riddles and similar soils—10 percent  
 The well drained Metea and similar soils—5 percent  
 The moderately well drained Williamstown and similar soils—5 percent

**Interpretive Groups**

*Land capability classification:* Miami—3e  
*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Miami Soil**

*Parent material:* Loamy till over loamy basal till  
*Drainage class:* Moderately well drained  
*Permeability to a depth of 40 inches:* Very slow to moderate  
*Permeability below a depth of 40 inches:* Very slow or slow  
*Depth to restrictive feature:* 24 to 40 inches to dense material

*Available water capacity:* About 6.1 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Moderate  
*Perched seasonal high water table is highest (depth, months):* 2.0 feet (January, February, March, April, May, June, November)  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and moderate for concrete  
*Surface runoff class:* High  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Low

**MmdC3—Miami clay loam, 5 to 10 percent slopes, severely eroded****Setting**

*Landform:* Moraines  
*Position on the landform:* Shoulders and backslopes

**Map Unit Composition**

The moderately well drained Miami and similar soils—80 percent  
 The well drained Riddles and similar soils—10 percent  
 The well drained Metea and similar soils—5 percent  
 The moderately well drained Williamstown and similar soils—5 percent

**Interpretive Groups**

*Land capability classification:* Miami—4e  
*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Miami Soil**

*Parent material:* Loamy till over loamy basal till  
*Drainage class:* Moderately well drained  
*Permeability to a depth of 40 inches:* Very slow to moderate  
*Permeability below a depth of 40 inches:* Very slow or slow  
*Depth to restrictive feature:* 24 to 40 inches to dense material  
*Available water capacity:* About 5.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 2.0 percent  
*Shrink-swell potential:* Moderate  
*Perched seasonal high water table is highest (depth, months):* 2.0 feet (January, February, March, April, May, June, November)  
*Hydric soil status:* Not hydric



*Accelerated erosion:* Surface layer is mostly subsoil material.

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* High

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Low

### **MmdD3—Miami clay loam, 10 to 18 percent slopes, severely eroded**

#### **Setting**

*Landform:* Moraines

*Position on the landform:* Backslopes

#### **Map Unit Composition**

The moderately well drained Miami and similar soils—80 percent

The well drained Riddles and similar soils—10 percent

The well drained Metea and similar soils—5 percent

The moderately well drained Williamstown and similar soils—5 percent

#### **Interpretive Groups**

*Land capability classification:* Miami—6e

*Prime farmland status:* Not prime farmland

#### **Properties and Qualities of the Miami Soil**

*Parent material:* Loamy till over loamy basal till

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Very slow to moderate

*Permeability below a depth of 40 inches:* Very slow or slow

*Depth to restrictive feature:* 24 to 40 inches to dense material

*Available water capacity:* About 5.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 2.0 feet (January, February, March, April, May, June, November)

*Hydric soil status:* Not hydric

*Accelerated erosion:* Surface layer is mostly subsoil material.

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* High

*Susceptibility to water erosion:* High

*Susceptibility to wind erosion:* Low

### **MouA—Milford silty clay loam, 0 to 1 percent slopes**

#### **Setting**

*Landform:* Depressions in lake plains

*Position on the landform:* Toeslopes and footslopes

#### **Map Unit Composition**

The poorly drained Milford and similar soils—85 percent

The poorly drained Radioville and similar soils—5 percent

The poorly drained Rensselaer and similar soils—5 percent

The poorly drained Whitepost and similar soils—5 percent

#### **Interpretive Groups**

*Land capability classification:* Milford—2w

*Prime farmland status:* Prime farmland where drained

#### **Properties and Qualities of the Milford Soil**

*Parent material:* Clayey lacustrine deposits

*Drainage class:* Poorly drained

*Permeability to a depth of 40 inches:* Moderately slow or moderate

*Permeability below a depth of 40 inches:* Moderately slow

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 10.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, June, July, November, December)

*Frequency of ponding:* Frequent (January, February, March, April, May, November, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

### **MsaA—Mishawaka sandy loam, 0 to 1 percent slopes**

#### **Setting**

*Landform:* Outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

### **Map Unit Composition**

The excessively drained Mishawaka and similar soils—95 percent

The well drained Elston and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Mishawaka—3s

*Prime farmland status:* Prime farmland

### **Properties and Qualities of the Mishawaka Soil**

*Parent material:* Sandy outwash

*Drainage class:* Excessively drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 6.0 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 4.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

### **MtsB2—Morley silt loam, 2 to 6 percent slopes, eroded**

#### **Setting**

*Landform:* Moraines and till plains

*Position on the landform:* Backslopes, shoulders, and summits

### **Map Unit Composition**

The moderately well drained Morley and similar soils—75 percent

The well drained Riddles and similar soils—10 percent

The moderately well drained Glynwood and similar soils—8 percent

The somewhat poorly drained Blount and similar soils—7 percent

### **Interpretive Groups**

*Land capability classification:* Morley—2e

*Prime farmland status:* Prime farmland

### **Properties and Qualities of the Morley Soil**

*Parent material:* Clayey till over clayey basal till

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Very slow to moderate

*Permeability below a depth of 40 inches:* Very slow or slow

*Depth to restrictive feature:* 20 to 40 inches to dense material

*Available water capacity:* About 4.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* High

*Perched seasonal high water table is highest (depth, months):* 1.0 foot (January, February, March, April, May)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Low

### **MtsC2—Morley silt loam, 6 to 12 percent slopes, eroded**

#### **Setting**

*Landform:* Moraines and till plains

*Position on the landform:* Backslopes

### **Map Unit Composition**

The moderately well drained Morley and similar soils—80 percent

The well drained Riddles and similar soils—10 percent

The moderately well drained Glynwood and similar soils—5 percent

The well drained Oshtemo and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Morley—3e

*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Morley Soil**

*Parent material:* Clayey till over clayey basal till

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Very slow to moderate

*Permeability below a depth of 40 inches:* Very slow or slow

*Depth to restrictive feature:* 20 to 40 inches to dense material

*Available water capacity:* About 4.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* High

*Perched seasonal high water table is highest (depth, months):* 1.0 foot (January, February, March, April, May)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* High

*Susceptibility to water erosion:* High

*Susceptibility to wind erosion:* Low

### **MubD3—Morley silty clay loam, 12 to 18 percent slopes, severely eroded**

#### ***Setting***

*Landform:* Moraines and till plains

*Position on the landform:* Backslopes

#### ***Map Unit Composition***

The moderately well drained Morley and similar soils—80 percent

The well drained Riddles and similar soils—10 percent

The moderately well drained Glynwood and similar soils—5 percent

The well drained Oshtemo and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Morley—6e

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Morley Soil***

*Parent material:* Clayey till over clayey basal till

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Very slow to moderately slow

*Permeability below a depth of 40 inches:* Very slow or slow

*Depth to restrictive feature:* 20 to 40 inches to dense material

*Available water capacity:* About 4.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* High

*Perched seasonal high water table is highest (depth, months):* 1.0 foot (January, February, March, April, May)

*Hydric soil status:* Not hydric

*Accelerated erosion:* Surface layer is mostly subsoil material.

*Potential for frost action:* High

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* High

*Susceptibility to water erosion:* High

*Susceptibility to wind erosion:* Low

### **MvhAN—Moston muck, drained, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Footslopes and toeslopes

#### ***Map Unit Composition***

The very poorly drained Moston, drained, and similar soils—80 percent

The very poorly drained Ackerman and similar soils—10 percent

The very poorly drained Muskego and similar soils—5 percent

The very poorly drained Toto and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Moston—4w

*Prime farmland status:* Farmland of statewide importance

#### ***Properties and Qualities of the Moston, Drained, Soil***

*Parent material:* Herbaceous organic material over coprogenic material over sandy outwash

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Slow to moderately rapid

*Permeability below a depth of 40 inches:* Slow to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 15.2 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **MvhAU—Moston muck, undrained, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Footslopes and toeslopes

#### ***Map Unit Composition***

The very poorly drained Moston, undrained, and similar soils—75 percent

The very poorly drained Ackerman and similar soils—10 percent

The very poorly drained Muskego and similar soils—5 percent

The very poorly drained Toto and similar soils—5 percent

Water—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Moston—5w

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Moston, Undrained, Soil***

*Parent material:* Herbaceous organic material over coprogenic material over sandy outwash

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Slow to moderately rapid

*Permeability below a depth of 40 inches:* Slow to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 15.2 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, June, September, October, November, December)

*Frequency of ponding:* Frequent (January, February, March, April, May, June, July, August, October, November, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **MvkA—Morocco loamy sand, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

The somewhat poorly drained Morocco and similar soils—85 percent

The poorly drained Gilford and similar soils—5 percent

The poorly drained Maumee and similar soils—5 percent

The well drained Osolo and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Morocco—3s

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Morocco Soil***

*Parent material:* Sandy outwash

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 5.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (April)

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High



**MwzAN—Muskego muck, drained, 0 to 1 percent slopes****Setting**

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Footslopes and toeslopes

**Map Unit Composition**

The very poorly drained Muskego, drained, and similar soils—75 percent

The very poorly drained Houghton and similar soils—10 percent

The very poorly drained Moston and similar soils—10 percent

The very poorly drained Palms and similar soils—5 percent

**Interpretive Groups**

*Land capability classification:* Muskego—4w

*Prime farmland status:* Farmland of statewide importance

**Properties and Qualities of the Muskego, Drained, Soil**

*Parent material:* Herbaceous organic material over coprogenic material

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Slow to moderately rapid

*Permeability below a depth of 40 inches:* Slow

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 17.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth, months):* At the surface (April, May, June)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

**MwzAU—Muskego muck, undrained, 0 to 1 percent slopes****Setting**

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Footslopes and toeslopes

**Map Unit Composition**

The very poorly drained Muskego, undrained, and similar soils—70 percent

The very poorly drained Houghton and similar soils—10 percent

The very poorly drained Moston and similar soils—10 percent

The very poorly drained Palms and similar soils—5 percent

Water—5 percent

**Interpretive Groups**

*Land capability classification:* Muskego—6w

*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Muskego, Undrained, Soil**

*Parent material:* Herbaceous organic material over coprogenic material

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Slow to moderately rapid

*Permeability below a depth of 40 inches:* Slow

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 17.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, June, December)

*Frequency of ponding:* Frequent (January, February, March, April, May, June, July, August, October, November, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High



## **Okra—Oshtemo fine sandy loam, 0 to 1 percent slopes**

### **Setting**

*Landform:* Moraines and till plains

*Position on the landform:* Summits, backslopes, and shoulders

### **Map Unit Composition**

The well drained Oshtemo and similar soils—80 percent

The well drained Hillsdale and similar soils—7 percent

The excessively drained Tyner and similar soils—7 percent

The well drained Riddles and similar soils—6 percent

### **Interpretive Groups**

*Land capability classification:* Oshtemo—3s

*Prime farmland status:* Prime farmland

### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 6.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and low for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

## **OkraB—Oshtemo fine sandy loam, 1 to 5 percent slopes**

### **Setting**

*Landform:* Moraines and till plains

*Position on the landform:* Backslopes, shoulders, and summits

### **Map Unit Composition**

The well drained Oshtemo and similar soils—80 percent

The well drained Hillsdale and similar soils—7 percent

The excessively drained Tyner and similar soils—7 percent

The well drained Riddles and similar soils—6 percent

### **Interpretive Groups**

*Land capability classification:* Oshtemo—3e

*Prime farmland status:* Prime farmland

### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 6.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and low for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

## **OkraC2—Oshtemo fine sandy loam, 5 to 10 percent slopes, eroded**

### **Setting**

*Landform:* Moraines and till plains

*Position on the landform:* Backslopes

### **Map Unit Composition**

The well drained Oshtemo and similar soils—80 percent

The well drained Hillsdale and similar soils—7 percent

The excessively drained Tyner and similar soils—7 percent

The well drained Riddles and similar soils—6 percent

### **Interpretive Groups**

*Land capability classification:* Oshtemo—3e

*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 6.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and low for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* High

### **OkrD—Oshtemo fine sandy loam, 10 to 18 percent slopes**

#### ***Setting***

*Landform:* Moraines and till plains

*Position on the landform:* Backslopes

#### ***Map Unit Composition***

The well drained Oshtemo and similar soils—80 percent

The well drained Hillsdale and similar soils—7 percent

The excessively drained Tyner and similar soils—7 percent

The well drained Riddles and similar soils—6 percent

#### ***Interpretive Groups***

*Land capability classification:* Oshtemo—4e

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Oshtemo Soil***

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 6.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and low for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* High

### **OlcA—Oshtemo sandy loam, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

The well drained Oshtemo and similar soils—80 percent

The moderately well drained Bronson and similar soils—7 percent

The excessively drained Tyner and similar soils—7 percent

The well drained Elston and similar soils—6 percent

#### ***Interpretive Groups***

*Land capability classification:* Oshtemo—3s

*Prime farmland status:* Prime farmland

#### ***Properties and Qualities of the Oshtemo Soil***

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and low for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

### **OlcB—Oshtemo sandy loam, 1 to 5 percent slopes**

#### ***Setting***

*Landform:* Outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

### **Map Unit Composition**

The well drained Oshtemo and similar soils—80 percent  
 The excessively drained Tyner and similar soils—8 percent  
 The somewhat excessively drained Coloma and similar soils—6 percent  
 The well drained Tracy and similar soils—6 percent

### **Interpretive Groups**

*Land capability classification:* Oshtemo—3s

*Prime farmland status:* Prime farmland

### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

### **OlcC2—Oshtemo sandy loam, 5 to 10 percent slopes, eroded**

#### **Setting**

*Landform:* Outwash plains

*Position on the landform:* Backslopes

### **Map Unit Composition**

The well drained Oshtemo and similar soils—80 percent  
 The excessively drained Tyner and similar soils—8 percent  
 The somewhat excessively drained Coloma and similar soils—6 percent  
 The well drained Tracy and similar soils—6 percent

### **Interpretive Groups**

*Land capability classification:* Oshtemo—3e

*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

### **OlcD—Oshtemo sandy loam, 10 to 18 percent slopes**

#### **Setting**

*Landform:* Outwash plains

*Position on the landform:* Backslopes

### **Map Unit Composition**

The well drained Oshtemo and similar soils—80 percent  
 The excessively drained Tyner and similar soils—8 percent  
 The somewhat excessively drained Coloma and similar soils—6 percent  
 The well drained Tracy and similar soils—6 percent

### **Interpretive Groups**

*Land capability classification:* Oshtemo—4e

*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

### **OmgA—Osolo loamy sand, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Outwash plains and outwash terraces  
*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

The well drained Osolo and similar soils—85 percent  
 The moderately well drained Brems and similar soils—5 percent  
 The somewhat excessively drained Coloma and similar soils—5 percent  
 The excessively drained Tyner and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Osolo—3s  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Osolo Soil***

*Parent material:* Sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 4.8 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 2.0 percent  
*Shrink-swell potential:* Low  
*Apparent seasonal high water table is highest (depth, months):* 3.5 feet (January, February, March, April, May, October, November, December)  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Low  
*Hazard of corrosion:* Low for steel and moderate for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **PaaAN—Palms muck, drained, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Depressions in lake plains, outwash plains, and till plains  
*Position on the landform:* Footslopes and toeslopes

#### ***Map Unit Composition***

The very poorly drained Palms, drained, and similar soils—80 percent  
 The very poorly drained Adrian and similar soils—10 percent  
 The very poorly drained Houghton and similar soils—5 percent  
 The very poorly drained Muskego and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Palms—3w  
*Prime farmland status:* Farmland of statewide importance

#### ***Properties and Qualities of the Palms, Drained, Soil***

*Parent material:* Herbaceous organic material over loamy glaciofluvial deposits  
*Drainage class:* Very poorly drained  
*Permeability to a depth of 40 inches:* Moderately slow to moderately rapid  
*Permeability below a depth of 40 inches:* Moderately slow or moderate  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 18.5 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 40.0 to 90.0 percent  
*Shrink-swell potential:* Low  
*Apparent seasonal high water table is highest (depth, months):* At the surface (April, May, June)  
*Frequency of ponding:* Frequent (January, February, March, April, May, November, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and moderate for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High



### **PaaAU—Palms muck, undrained, 0 to 1 percent slopes**

#### **Setting**

*Landform:* Depressions in lake plains, outwash plains, and till plains

*Position on the landform:* Footslopes and toeslopes

#### **Map Unit Composition**

The very poorly drained Palms, undrained, and similar soils—75 percent

The very poorly drained Adrian and similar soils—10 percent

The very poorly drained Houghton and similar soils—5 percent

The very poorly drained Muskego and similar soils—5 percent

Water—5 percent

#### **Interpretive Groups**

*Land capability classification:* Palms—3w

*Prime farmland status:* Not prime farmland

#### **Properties and Qualities of the Palms, Undrained, Soil**

*Parent material:* Herbaceous organic material over loamy glaciofluvial deposits

*Drainage class:* Very poorly drained

*Permeability to a depth of 40 inches:* Moderately slow to moderately rapid

*Permeability below a depth of 40 inches:* Moderately slow or moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 18.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 40.0 to 90.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, June, December)

*Frequency of ponding:* Frequent (January, February, March, April, May, June, July, August, October, November, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **Pmg—Pits, gravel**

#### **Setting**

*Landform:* Outwash plains and till plains

Areas of Pits, gravel, are excavations and filled-in areas. Because of the extreme variability in the material in these areas, no typical soil series is representative of these areas. Generally, these areas consist of mixed gravel and sandy materials. These are areas where various thicknesses of soil material have been removed. Included are areas of associated loamy materials.

#### **Map Unit Composition**

Pits, gravel—100 percent

#### **Interpretive Groups**

*Land capability classification:* Pits, gravel—None assigned

*Prime farmland status:* Not prime farmland

#### **Properties and Qualities of Pits, Gravel**

*Hydric soil status:* Unranked

### **PxIA—Psammaquents**

#### **Setting**

*Landform:* Outwash plains

Areas of Psammaquents are excavations and filled-in areas. Because of the extreme variability in the soils in these areas, no typical soil series is representative of these soils. Generally, these areas consist of wet, mixed, sandy materials. These are areas where various thicknesses of soil material have been removed near highway interchanges.

#### **Map Unit Composition**

The somewhat poorly drained Psammaquents and similar soils—85 percent

The excessively drained Psammments and similar soils—15 percent

#### **Interpretive Groups**

*Land capability classification:* Psammaquents—8

*Prime farmland status:* Not prime farmland

#### **Properties and Qualities of the Psammaquents Soil**

*Drainage class:* Somewhat poorly drained



*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (April, May)

*Hydric soil status:* Unranked

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

## **Pxo—Psamments**

### **Setting**

*Landform:* Outwash plains

Areas of Psamments are excavations and filled-in areas. Because of the extreme variability in the soils in these areas, no typical soil series is representative of these soils. Generally, these areas consist of mixed, sandy soil material. These are areas where various thicknesses of soil material have been removed. Included are areas of associated loamy materials.

### **Map Unit Composition**

The excessively drained Psamments and similar soils—85 percent

The somewhat poorly drained Psammaquents and similar soils—15 percent

### **Interpretive Groups**

*Land capability classification:* Psamments—8

*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Psamments Soil**

*Drainage class:* Excessively drained

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Unranked

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

## **QuiA—Quinn loam, 0 to 1 percent slopes**

### **Setting**

*Landform:* Outwash plains

*Position on the landform:* Toeslopes and footslopes

### **Map Unit Composition**

The poorly drained Quinn and similar soils—80 percent

The somewhat poorly drained Auten and similar soils—10 percent

The somewhat poorly drained Brady and similar soils—5 percent

The poorly drained Gilford and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Quinn—2w

*Prime farmland status:* Prime farmland where drained

### **Properties and Qualities of the Quinn Soil**

*Parent material:* Loamy outwash

*Drainage class:* Poorly drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 4.0 percent

*Shrink-swell potential:* Low

*Perched seasonal high water table is highest (depth, months):* At the surface (January, February, March)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and high for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

## **QujA—Quinn sandy loam, 0 to 1 percent slopes**

### **Setting**

*Landform:* Outwash plains

*Position on the landform:* Toeslopes and footslopes

### **Map Unit Composition**

The poorly drained Quinn and similar soils—75 percent

The somewhat poorly drained Brady and similar soils—10 percent

The somewhat poorly drained Morocco and similar soils—10 percent

The poorly drained Newton and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Quinn—2w

*Prime farmland status:* Prime farmland where drained

### **Properties and Qualities of the Quinn Soil**

*Parent material:* Loamy outwash  
*Drainage class:* Poorly drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Moderate to rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 2.0 to 4.0 percent  
*Shrink-swell potential:* Low  
*Perched seasonal high water table is highest (depth, months):* At the surface (January, February, March)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and high for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **RenA—Rensselaer mucky loam, 0 to 1 percent slopes**

#### **Setting**

*Landform:* Depressions in outwash plains and till plains  
*Position on the landform:* Toeslopes and footslopes

#### **Map Unit Composition**

The poorly drained Rensselaer and similar soils—85 percent  
 The poorly drained Brookston and similar soils—5 percent  
 The very poorly drained Gilford and similar soils—5 percent  
 The poorly drained Goodell and similar soils—3 percent  
 The very poorly drained Palms and similar soils—2 percent

#### **Interpretive Groups**

*Land capability classification:* Rensselaer—2w  
*Prime farmland status:* Prime farmland where drained

### **Properties and Qualities of the Rensselaer Soil**

*Parent material:* Fine-loamy outwash  
*Drainage class:* Poorly drained  
*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Slow to moderate  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 10.5 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 10.0 to 20.0 percent  
*Shrink-swell potential:* Moderate  
*Apparent seasonal high water table is highest (depth, months):* At the surface (April, May)  
*Frequency of ponding:* Frequent (January, February, March, April, May, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* Moderate for steel and low for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **ReyA—Rensselaer loam, 0 to 1 percent slopes**

#### **Setting**

*Landform:* Depressions in outwash plains and till plains  
*Position on the landform:* Toeslopes and footslopes

#### **Map Unit Composition**

The poorly drained Rensselaer and similar soils—75 percent  
 The poorly drained Brookston and similar soils—10 percent  
 The poorly drained Goodell and similar soils—10 percent  
 The somewhat poorly drained Whitaker and similar soils—5 percent

#### **Interpretive Groups**

*Land capability classification:* Rensselaer—2w  
*Prime farmland status:* Prime farmland where drained

### **Properties and Qualities of the Rensselaer Soil**

*Parent material:* Fine-loamy outwash  
*Drainage class:* Poorly drained  
*Permeability to a depth of 40 inches:* Moderate  
*Permeability below a depth of 40 inches:* Slow to moderate  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 10.5 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 3.0 to 6.0 percent

*Shrink-swell potential:* Moderate  
*Apparent seasonal high water table is highest (depth, months):* At the surface (April, May)  
*Frequency of ponding:* Frequent (January, February, March, April, May, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* Moderate for steel and low for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **RopA—Riddles-Oshtemo fine sandy loams, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Moraines and till plains  
*Position on the landform:* Summits, backslopes, and shoulders

#### ***Map Unit Composition***

The well drained Riddles and similar soils—50 percent  
 The well drained Oshtemo and similar soils—35 percent  
 The well drained Metea and similar soils—5 percent  
 The excessively drained Tyner and similar soils—5 percent  
 The moderately well drained Williamstown and similar soils—3 percent  
 The well drained Crumstown and similar soils—2 percent

#### ***Interpretive Groups***

*Land capability classification:* Riddles—1; Oshtemo—3s  
*Prime farmland status:* Prime farmland

#### ***Properties and Qualities of the Riddles Soil***

*Parent material:* Loamy till over loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Very slow to moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 9.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Moderate  
*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and moderate for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

#### ***Properties and Qualities of the Oshtemo Soil***

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 6.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

### **RopB—Riddles-Oshtemo fine sandy loams, 1 to 5 percent slopes**

#### ***Setting***

*Landform:* Moraines and till plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

The well drained Riddles and similar soils—50 percent  
 The well drained Oshtemo and similar soils—35 percent  
 The well drained Metea and similar soils—5 percent  
 The excessively drained Tyner and similar soils—5 percent  
 The moderately well drained Williamstown and similar soils—3 percent  
 The well drained Crumstown and similar soils—2 percent

#### ***Interpretive Groups***

*Land capability classification:* Riddles—2e; Oshtemo—3e  
*Prime farmland status:* Prime farmland

### **Properties and Qualities of the Riddles Soil**

*Parent material:* Loamy till over loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Very slow to moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 9.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Moderate  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and moderate for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 6.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High

### **RopC2—Riddles-Oshtemo fine sandy loams, 5 to 10 percent slopes, eroded**

#### **Setting**

*Landform:* Moraines and till plains  
*Position on the landform:* Backslopes

### **Map Unit Composition**

The well drained Riddles and similar soils—50 percent  
 The well drained Oshtemo and similar soils—35 percent  
 The well drained Metea and similar soils—5 percent  
 The excessively drained Tyner and similar soils—5 percent  
 The moderately well drained Miami and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Riddles—3e;  
 Oshtemo—3s  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Riddles Soil**

*Parent material:* Loamy till over loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Very slow to moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 9.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Moderate  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and moderate for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 6.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric



*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

## **RopD2—Riddles-Oshtemo fine sandy loams, 10 to 18 percent slopes, eroded**

### **Setting**

*Landform:* Moraines and till plains  
*Position on the landform:* Backslopes

### **Map Unit Composition**

The well drained Riddles and similar soils—50 percent  
 The well drained Oshtemo and similar soils—35 percent  
 The well drained Metea and similar soils—5 percent  
 The excessively drained Tyner and similar soils—5 percent  
 The moderately well drained Miami and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Riddles—4e;  
 Oshtemo—4s  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Riddles Soil**

*Parent material:* Loamy till over loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Very slow to moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 9.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Moderate  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and moderate for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* High  
*Susceptibility to wind erosion:* Moderately high

### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 6.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

## **RoqB—Riddles-Metea complex, 1 to 5 percent slopes**

### **Setting**

*Landform:* Till plains  
*Position on the landform:* Shoulders and backslopes

### **Map Unit Composition**

The well drained Riddles and similar soils—55 percent  
 The well drained Metea and similar soils—30 percent  
 The well drained Ormas and similar soils—5 percent  
 The well drained Oshtemo and similar soils—5 percent  
 The moderately well drained Williamstown and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Riddles—3e; Metea—3e  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Riddles Soil**

*Parent material:* Loamy till over loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Very slow to moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 9.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Moderate



*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

### **Properties and Qualities of the Metea Soil**

*Parent material:* Sandy outwash over loamy till

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate to rapid

*Permeability below a depth of 40 inches:* Moderately slow or moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.2 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

## **RoqC2—Riddles-Metea complex, 5 to 10 percent slopes, eroded**

### **Setting**

*Landform:* Till plains

*Position on the landform:* Shoulders and backslopes

### **Map Unit Composition**

The well drained Riddles and similar soils—55 percent

The well drained Metea and similar soils—30 percent

The well drained Ormas and similar soils—5 percent

The well drained Oshtemo and similar soils—5 percent

The moderately well drained Williamstown and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Riddles—3e; Metea—3e

*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Riddles Soil**

*Parent material:* Loamy till over loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate or moderately rapid

*Permeability below a depth of 40 inches:* Very slow to moderately rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 9.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Low

### **Properties and Qualities of the Metea Soil**

*Parent material:* Sandy outwash over loamy till

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate to rapid

*Permeability below a depth of 40 inches:* Moderately slow or moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* High

## **RoqD2—Riddles-Metea complex, 10 to 18 percent slopes, eroded**

### **Setting**

*Landform:* Till plains

*Position on the landform:* Backslopes

### **Map Unit Composition**

The well drained Riddles and similar soils—50 percent  
 The well drained Metea and similar soils—30 percent  
 The moderately well drained Miami and similar soils—10 percent  
 The well drained Oshtemo and similar soils—5 percent  
 The excessively drained Tyner and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Riddles—4e; Metea—4e  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Riddles Soil**

*Parent material:* Loamy till over loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Very slow to moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 9.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Moderate  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and moderate for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* High  
*Susceptibility to wind erosion:* Low

### **Properties and Qualities of the Metea Soil**

*Parent material:* Sandy outwash over loamy till  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate to rapid  
*Permeability below a depth of 40 inches:* Moderately slow or moderate  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.1 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 2.0 percent  
*Shrink-swell potential:* Moderate  
*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* High

## **SdzA—Selfridge-Crosier complex, 0 to 1 percent slopes**

### **Setting**

*Landform:* Till plains

*Position on the landform:* Backslopes, shoulders, and summits

### **Map Unit Composition**

The somewhat poorly drained Selfridge and similar soils—50 percent  
 The somewhat poorly drained Crosier and similar soils—35 percent  
 The somewhat poorly drained Brady and similar soils—5 percent  
 The poorly drained Brookston and similar soils—5 percent  
 The somewhat poorly drained Morocco and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Selfridge—3w; Crosier—2w

*Prime farmland status:* Prime farmland

### **Properties and Qualities of the Selfridge Soil**

*Parent material:* Loamy outwash over sandy outwash  
*Drainage class:* Somewhat poorly drained  
*Permeability to a depth of 40 inches:* Moderately slow to rapid  
*Permeability below a depth of 40 inches:* Moderately slow  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 6.5 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Moderate  
*Perched seasonal high water table is highest (depth, months):* 1.0 foot (March, April)  
*Hydric soil status:* Not hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and low for concrete  
*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **Properties and Qualities of the Crosier Soil**

*Parent material:* Loamy till over loamy basal till

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Slow to moderate

*Permeability below a depth of 40 inches:* Slow

*Depth to restrictive feature:* 24 to 40 inches to dense material

*Available water capacity:* About 6.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 0.5 foot (March, April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

## **SdzaB—Selfridge-Brems loamy sands, 1 to 4 percent slopes**

### **Setting**

*Landform:* Till plains

*Position on the landform:* Backslopes, shoulders, and summits

### **Map Unit Composition**

The somewhat poorly drained Selfridge and similar soils—50 percent

The moderately well drained Brems and similar soils—35 percent

The somewhat poorly drained Crosier and similar soils—5 percent

The moderately well drained Moon and similar soils—5 percent

The somewhat poorly drained Morocco and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Selfridge—3e; Brems—4s

*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Selfridge Soil**

*Parent material:* Loamy outwash over sandy outwash

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Moderately slow to rapid

*Permeability below a depth of 40 inches:* Moderately slow

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 6.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 1.0 foot (March, April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **Properties and Qualities of the Brems Soil**

*Parent material:* Sandy outwash

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 5.3 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 1.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* 2.0 feet (January, February, March, April, May, October, November, December)

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

## **SesA—Schoolcraft loam, 0 to 1 percent slopes**

### **Setting**

*Landform:* Outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

### **Map Unit Composition**

The well drained Schoolcraft and similar soils—80 percent

The well drained Volinia and similar soils—8 percent

The well drained Bainter and similar soils—7 percent  
The well drained Elston and similar soils—5 percent

### ***Interpretive Groups***

*Land capability classification:* Schoolcraft—2s

*Prime farmland status:* Prime farmland

### ***Properties and Qualities of the Schoolcraft Soil***

*Parent material:* Loamy over sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate to rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

## **Sn1A—Southwest silt loam, 0 to 1 percent slopes**

### ***Setting***

*Landform:* Depressions on till plains

*Position on the landform:* Toeslopes and footslopes

### ***Map Unit Composition***

The poorly drained Southwest and similar soils—75 percent

The poorly drained Brookston and similar soils—10 percent

The poorly drained Washtenaw and similar soils—10 percent

The very poorly drained Wunabuna and similar soils—5 percent

### ***Interpretive Groups***

*Land capability classification:* Southwest—2w

*Prime farmland status:* Prime farmland where drained

### ***Properties and Qualities of the Southwest Soil***

*Parent material:* Fine-silty alluvium over fine-silty glaciofluvial deposits

*Drainage class:* Poorly drained

*Permeability to a depth of 40 inches:* Moderately slow or moderate

*Permeability below a depth of 40 inches:* Moderately slow

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 12.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth, months):* At the surface (April, May)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

## **TmpA—Tracy sandy loam, 0 to 1 percent slopes**

### ***Setting***

*Landform:* Outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

### ***Map Unit Composition***

The well drained Tracy and similar soils—80 percent

The well drained Oshtemo and similar soils—8 percent

The well drained Coupee and similar soils—7 percent

The somewhat poorly drained Auten and similar soils—5 percent

### ***Interpretive Groups***

*Land capability classification:* Tracy—2s

*Prime farmland status:* Prime farmland

### ***Properties and Qualities of the Tracy Soil***

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent



*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and high for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

### **TmpB—Tracy sandy loam, 1 to 5 percent slopes**

#### **Setting**

*Landform:* Outwash plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### **Map Unit Composition**

The well drained Tracy and similar soils—80 percent  
 The well drained Oshtemo and similar soils—10 percent  
 The well drained Coupee and similar soils—5 percent  
 The well drained Kalamazoo and similar soils—5 percent

#### **Interpretive Groups**

*Land capability classification:* Tracy—2e  
*Prime farmland status:* Prime farmland

#### **Properties and Qualities of the Tracy Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate  
*Permeability below a depth of 40 inches:* Moderate to rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.6 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and high for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

### **TmpC2—Tracy sandy loam, 5 to 10 percent slopes, eroded**

#### **Setting**

*Landform:* Outwash plains  
*Position on the landform:* Backslopes

#### **Map Unit Composition**

The well drained Tracy and similar soils—80 percent  
 The well drained Oshtemo and similar soils—10 percent  
 The well drained Kalamazoo and similar soils—5 percent  
 The excessively drained Tyner and similar soils—5 percent

#### **Interpretive Groups**

*Land capability classification:* Tracy—3e  
*Prime farmland status:* Not prime farmland

#### **Properties and Qualities of the Tracy Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate  
*Permeability below a depth of 40 inches:* Moderate to rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.5 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and high for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

### **TmpD—Tracy sandy loam, 10 to 18 percent slopes**

#### **Setting**

*Landform:* Outwash plains  
*Position on the landform:* Backslopes

#### **Map Unit Composition**

The well drained Tracy and similar soils—80 percent  
 The well drained Oshtemo and similar soils—10 percent



The well drained Spinks and similar soils—5 percent  
The excessively drained Tyner and similar soils—  
5 percent

### ***Interpretive Groups***

*Land capability classification:* Tracy—4e  
*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Tracy Soil***

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate  
*Permeability below a depth of 40 inches:* Moderate to rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.6 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 2.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and high for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* High  
*Susceptibility to wind erosion:* Moderately high

### **TnwA—Troxel silt loam, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Outwash plains, stream terraces, and till plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

The well drained Troxel and similar soils—80 percent  
The well drained Elston and similar soils—10 percent  
The well drained Coupee and similar soils—5 percent  
The well drained Tracy and similar soils—5 percent

### ***Interpretive Groups***

*Land capability classification:* Troxel—1  
*Prime farmland status:* Prime farmland

### ***Properties and Qualities of the Troxel Soil***

*Parent material:* Silty colluvium over loamy drift  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate or moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 13.3 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 3.0 to 5.0 percent  
*Shrink-swell potential:* Moderate  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **TxuA—Tyner loamy sand, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Outwash plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

The excessively drained Tyner and similar soils—85 percent  
The excessively drained Bristol and similar soils—5 percent  
The somewhat excessively drained Coloma and similar soils—5 percent  
The well drained Osolo and similar soils—5 percent

### ***Interpretive Groups***

*Land capability classification:* Tyner—3s  
*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Tyner Soil***

*Parent material:* Sandy outwash  
*Drainage class:* Excessively drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 4.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 1.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High

### **TxuB—Tyner loamy sand, 1 to 5 percent slopes**

#### **Setting**

*Landform:* Outwash plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### **Map Unit Composition**

The excessively drained Tyner and similar soils—85 percent  
 The excessively drained Bristol and similar soils—5 percent  
 The somewhat excessively drained Coloma and similar soils—5 percent  
 The well drained Osolo and similar soils—5 percent

#### **Interpretive Groups**

*Land capability classification:* Tyner—3s  
*Prime farmland status:* Not prime farmland

#### **Properties and Qualities of the Tyner Soil**

*Parent material:* Sandy outwash  
*Drainage class:* Excessively drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 4.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 1.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Low  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High

### **TxuC—Tyner loamy sand, 5 to 10 percent slopes**

#### **Setting**

*Landform:* Outwash plains  
*Position on the landform:* Shoulders and backslopes

#### **Map Unit Composition**

The excessively drained Tyner and similar soils—85 percent  
 The excessively drained Bristol and similar soils—5 percent  
 The somewhat excessively drained Coloma and similar soils—5 percent  
 The well drained Osolo and similar soils—5 percent

#### **Interpretive Groups**

*Land capability classification:* Tyner—3e  
*Prime farmland status:* Not prime farmland

#### **Properties and Qualities of the Tyner Soil**

*Parent material:* Sandy outwash  
*Drainage class:* Excessively drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 4.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 1.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Low  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High

### **TxuD—Tyner loamy sand, 10 to 18 percent slopes**

#### **Setting**

*Landform:* Outwash plains  
*Position on the landform:* Backslopes

#### **Map Unit Composition**

The excessively drained Tyner and similar soils—85 percent  
 The excessively drained Bristol and similar soils—5 percent  
 The somewhat excessively drained Coloma and similar soils—5 percent  
 The well drained Osolo and similar soils—5 percent

#### **Interpretive Groups**

*Land capability classification:* Tyner—4e  
*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Tyner Soil**

*Parent material:* Sandy outwash  
*Drainage class:* Excessively drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 4.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 1.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Low  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* High

**TxuF—Tyner loamy sand, 18 to 45 percent slopes****Setting**

*Landform:* Outwash plains  
*Position on the landform:* Backslopes

**Map Unit Composition**

The excessively drained Tyner and similar soils—80 percent  
 The excessively drained Bristol and similar soils—8 percent  
 The somewhat excessively drained Coloma and similar soils—8 percent  
 The well drained Osolo and similar soils—4 percent

**Interpretive Groups**

*Land capability classification:* Tyner—6e  
*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Tyner Soil**

*Parent material:* Sandy outwash  
*Drainage class:* Excessively drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 4.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 1.0 percent  
*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* High

*Susceptibility to wind erosion:* High

**Uam—Udorthents, loamy****Setting**

*Landform:* Moraines and till plains

Because of the extreme variability of these soils, no typical soil series is representative of these soils. Generally, they consist of areas of mixed, loamy soil materials of areas that have been borrowed from for fill materials or the fill material itself.

**Map Unit Composition**

The well drained Udorthents, loamy, and similar soils—100 percent

**Interpretive Groups**

*Land capability classification:* Udorthents, loamy—8  
*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Udorthents, Loamy, Soil**

*Drainage class:* Well drained

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Unranked

*Potential for frost action:* Moderate

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* High

*Susceptibility to water erosion:* Low

**UdeA—Urban land-Bainter complex, 0 to 1 percent slopes****Setting**

*Landform:* Urban land on outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

**Map Unit Composition**

Urban land—50 percent

The well drained Bainter and similar soils—40 percent  
 The excessively drained Bristol and similar soils—4 percent  
 The somewhat poorly drained Brady and similar soils—3 percent  
 The moderately well drained Bronson and similar soils—3 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Bainter—3s

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures (fig. 2).

### ***Properties and Qualities of the Bainter Soil***

*Parent material:* Loamy over sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.2 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high



Figure 2.—Aerial photo of the South Bend downtown area. Many of the soils in this area are urban land complex units.



## **UdeB—Urban land-Bainter complex, 1 to 4 percent slopes**

### ***Setting***

*Landform:* Urban land on outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

### ***Map Unit Composition***

Urban land—50 percent

The well drained Bainter and similar soils—40 percent

The excessively drained Bristol and similar soils—4 percent

The somewhat poorly drained Brady and similar soils—3 percent

The moderately well drained Bronson and similar soils—3 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Bainter—3e

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Bainter Soil***

*Parent material:* Loamy over sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.2 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

## **UdeC—Urban land-Bainter complex, 4 to 10 percent slopes**

### ***Setting***

*Landform:* Urban land on outwash plains

*Position on the landform:* Backslopes

### ***Map Unit Composition***

Urban land—50 percent

The well drained Bainter and similar soils—40 percent

The well drained Oshtemo and similar soils—4 percent

The excessively drained Bristol and similar soils—3 percent

The excessively drained Mishawaka and similar soils—3 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Bainter—3e

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Bainter Soil***

*Parent material:* Loamy over sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Moderately high



## **UdkA—Urban land-Brady complex, 0 to 1 percent slopes**

### ***Setting***

*Landform:* Urban land on outwash plains and outwash terraces

*Position on the landform:* Backslopes, shoulders, and summits

### ***Map Unit Composition***

Urban land—50 percent

The somewhat poorly drained Brady and similar soils—40 percent

The poorly drained Gilford and similar soils—4 percent

The moderately well drained Brems and similar soils—3 percent

The somewhat poorly drained Morocco and similar soils—3 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Brady—2w

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Brady Soil***

*Parent material:* Loamy outwash over sandy and gravelly outwash

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Moderately rapid

*Permeability below a depth of 40 inches:* Moderately rapid or rapid

*Depth to restrictive feature:* 40 to 70 inches to strongly contrasting textural stratification

*Available water capacity:* About 7.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 4.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

## **UdzA—Urban land-Auten complex, 0 to 1 percent slopes**

### ***Setting***

*Landform:* Urban land on moraines, outwash plains, and terraces

*Position on the landform:* Backslopes, shoulders, and summits

### ***Map Unit Composition***

Urban land—50 percent

The somewhat poorly drained Auten and similar soils—40 percent

The somewhat poorly drained Brady and similar soils—4 percent

The poorly drained Quinn and similar soils—3 percent

The poorly drained Rensselaer and similar soils—3 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Auten—2s

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Auten Soil***

*Parent material:* Loamy and/or outwash sandy

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Moderate to rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* 20 to 35 inches to strongly contrasting textural stratification

*Available water capacity:* About 6.2 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 4.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and high for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

**UeaA—Urban land-Crosier complex,  
0 to 3 percent slopes****Setting**

*Landform:* Urban land on till plains

*Position on the landform:* Backslopes, shoulders, and summits

**Map Unit Composition**

Urban land—50 percent

The somewhat poorly drained Crosier and similar soils—40 percent

The poorly drained Brookston and similar soils—4 percent

The somewhat poorly drained Selfridge and similar soils—3 percent

The well drained Riddles and similar soils—2 percent

The somewhat poorly drained Baugo and similar soils—1 percent

**Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Crosier—2e

*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

**Properties and Qualities of the Crosier Soil**

*Parent material:* Loamy till over loamy basal till

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Slow to moderate

*Permeability below a depth of 40 inches:* Slow

*Depth to restrictive feature:* 24 to 40 inches to dense material

*Available water capacity:* About 6.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 0.5 foot (March, April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

**UeqA—Urban land-Gilford complex, 0 to 1  
percent slopes****Setting**

*Landform:* Urban land in depressions and drainageways on outwash plains

*Position on the landform:* Footslopes and toeslopes

**Map Unit Composition**

Urban land—50 percent

The poorly drained Gilford and similar soils—40 percent

The poorly drained Sebewa and similar soils—5 percent

The poorly drained Rensselaer and similar soils—3 percent

The somewhat poorly drained Brady and similar soils—2 percent

**Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Gilford—2w

*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

**Properties and Qualities of the Gilford Soil**

*Parent material:* Coarse-loamy outwash over sandy outwash

*Drainage class:* Poorly drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 6.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 4.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

### **UewA—Urban land-Brems-Morocco complex, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Urban land on outwash plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent  
 The moderately well drained Brems and similar soils—25 percent  
 The somewhat poorly drained Morocco and similar soils—15 percent  
 The somewhat poorly drained Brady and similar soils—5 percent  
 The well drained Osolo and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Brems—4s; Morocco—4s  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Brems Soil***

*Parent material:* Sandy outwash  
*Drainage class:* Moderately well drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 5.3 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 1.0 percent  
*Shrink-swell potential:* Low  
*Apparent seasonal high water table is highest (depth, months):* 2.0 feet (January, February, March, April, May, October, November, December)  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Low  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High

#### ***Properties and Qualities of the Morocco Soil***

*Parent material:* Sandy outwash  
*Drainage class:* Somewhat poorly drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 5.1 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 2.0 percent  
*Shrink-swell potential:* Low  
*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (April)  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* High

### **UfbA—Urban land-Brookston complex, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Urban land in depressions on outwash plains and till plains  
*Position on the landform:* Toeslopes and footslopes

#### ***Map Unit Composition***

Urban land—50 percent  
 The poorly drained Brookston and similar soils—40 percent  
 The poorly drained Rensselaer and similar soils—4 percent  
 The somewhat poorly drained Crosier and similar soils—3 percent  
 The poorly drained Goodell and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Brookston—2w  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Brookston Soil***

*Parent material:* Fine-loamy till  
*Drainage class:* Poorly drained  
*Permeability to a depth of 40 inches:* Moderate  
*Permeability below a depth of 40 inches:* Moderately slow or moderate  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 9.8 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 3.0 to 5.0 percent  
*Shrink-swell potential:* Moderate  
*Apparent seasonal high water table is highest (depth, months):* At the surface (April, May)  
*Frequency of ponding:* Frequent (January, February, March, April, May, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and low for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **UfhA—Urban land-Coloma complex, 0 to 2 percent slopes**

#### ***Setting***

*Landform:* Urban land on moraines and outwash plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent  
 The somewhat excessively drained Coloma and similar soils—40 percent  
 The excessively drained Tyner and similar soils—4 percent  
 The excessively drained Bristol and similar soils—3 percent  
 The well drained Osolo and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Coloma—4s  
*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Coloma Soil***

*Parent material:* Sandy outwash  
*Drainage class:* Somewhat excessively drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Moderately rapid or rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 4.8 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 2.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Low  
*Hazard of corrosion:* Low for steel and moderate for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Very high

### **UfhB—Urban land-Coloma complex, 2 to 5 percent slopes**

#### ***Setting***

*Landform:* Urban land on moraines and outwash plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent  
 The somewhat excessively drained Coloma and similar soils—40 percent  
 The excessively drained Tyner and similar soils—4 percent  
 The excessively drained Bristol and similar soils—3 percent  
 The well drained Osolo and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Coloma—4s  
*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### **Properties and Qualities of the Coloma Soil**

*Parent material:* Sandy outwash  
*Drainage class:* Somewhat excessively drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Moderately rapid or rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 4.8 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 2.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Low  
*Hazard of corrosion:* Low for steel and moderate for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Very high

### **UfhC—Urban land-Coloma complex, 5 to 10 percent slopes**

#### **Setting**

*Landform:* Urban land on moraines and outwash plains  
*Position on the landform:* Backslopes

#### **Map Unit Composition**

Urban land—50 percent  
 The somewhat excessively drained Coloma and similar soils—40 percent  
 The excessively drained Bristol and similar soils—4 percent  
 The excessively drained Tyner and similar soils—4 percent  
 The well drained Osolo and similar soils—2 percent

#### **Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Coloma—6s  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### **Properties and Qualities of the Coloma Soil**

*Parent material:* Sandy outwash

*Drainage class:* Somewhat excessively drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Moderately rapid or rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 4.8 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 2.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Low  
*Hazard of corrosion:* Low for steel and moderate for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Very high

### **UfmA—Urban land-Coupee complex, 0 to 1 percent slopes**

#### **Setting**

*Landform:* Urban land on outwash plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### **Map Unit Composition**

Urban land—50 percent  
 The well drained Coupee and similar soils—40 percent  
 The well drained Door and similar soils—4 percent  
 The somewhat poorly drained Auten and similar soils—3 percent  
 The well drained Tracy and similar soils—3 percent

#### **Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Coupee—2s  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### **Properties and Qualities of the Coupee Soil**

*Parent material:* Loamy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate to rapid  
*Permeability below a depth of 40 inches:* Rapid



*Depth to restrictive feature:* 30 to 40 inches to strongly contrasting textural stratification

*Available water capacity:* About 8.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 4.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and high for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

### **UfrA—Urban land-Del Rey complex, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Urban land on lake plains

*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent

The somewhat poorly drained Del Rey and similar soils—40 percent

The poorly drained Milford and similar soils—4 percent

The somewhat poorly drained Baugo and similar soils—3 percent

The somewhat poorly drained Whitaker and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Del Rey—2w

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Del Rey Soil***

*Parent material:* Clayey lacustrine deposits

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Slow to moderate

*Permeability below a depth of 40 inches:* Slow

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 0.5 foot (March, April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* High

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

### **UftA—Urban land-Elston complex, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Urban land on outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent

The well drained Elston and similar soils—40 percent

The excessively drained Mishawaka and similar soils—4 percent

The well drained Bainter and similar soils—3 percent

The well drained Schoolcraft and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Elston—2s

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Elston Soil***

*Parent material:* Loamy over sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 4.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and moderate for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

### **UfzA—Urban land-Mishawaka complex, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Urban land on outwash plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent  
 The excessively drained Mishawaka and similar soils—45 percent  
 The well drained Elston and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Mishawaka—3s  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Mishawaka Soil***

*Parent material:* Sandy outwash  
*Drainage class:* Excessively drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 6.0 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 2.0 to 4.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric  
*Potential for frost action:* Low  
*Hazard of corrosion:* Low for steel and moderate for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

### **UgaA—Urban land-Morocco complex, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Urban land on outwash plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent  
 The somewhat poorly drained Morocco and similar soils—40 percent  
 The well drained Osolo and similar soils—4 percent  
 The poorly drained Gilford and similar soils—3 percent  
 The poorly drained Maumee and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Morocco—3s  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Morocco Soil***

*Parent material:* Sandy outwash  
*Drainage class:* Somewhat poorly drained  
*Permeability to a depth of 40 inches:* Rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 5.1 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 0.5 to 2.0 percent  
*Shrink-swell potential:* Low  
*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (April)  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **UgIA—Urban land-Osolo complex, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Urban land on outwash plains and outwash terraces

*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent

The well drained Osolo and similar soils—40 percent

The excessively drained Tyner and similar soils—4 percent

The moderately well drained Brems and similar soils—3 percent

The somewhat excessively drained Coloma and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Osolo—3s

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Osolo Soil***

*Parent material:* Sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 4.8 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* 3.5 feet (January, February, March, April, May, October, November, December)

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **UgrA—Urban land-Rensselaer complex, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Urban land in depressions on outwash plains and till plains

*Position on the landform:* Toeslopes and footslopes

#### ***Map Unit Composition***

Urban land—50 percent

The poorly drained Rensselaer and similar soils—40 percent

The poorly drained Brookston and similar soils—4 percent

The poorly drained Goodell and similar soils—3 percent

The somewhat poorly drained Whitaker and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Rensselaer—2w

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Rensselaer Soil***

*Parent material:* Fine-loamy outwash

*Drainage class:* Poorly drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Slow to moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 10.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 3.0 to 6.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth, months):* At the surface (April, May)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* Moderate for steel and low for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

## **UgsA—Urban land-Riddles-Oshtemo complex, 0 to 1 percent slopes**

### ***Setting***

*Landform:* Urban land on moraines and till plains

*Position on the landform:* Backslopes, shoulders, and summits

### ***Map Unit Composition***

Urban land—50 percent

The well drained Riddles and similar soils—25 percent

The well drained Oshtemo and similar soils—15 percent

The well drained Metea and similar soils—3 percent

The excessively drained Tyner and similar soils—3 percent

The well drained Crumstown and similar soils—2 percent

The moderately well drained Williamstown and similar soils—2 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Riddles—1; Oshtemo—3s

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Riddles Soil***

*Parent material:* Loamy till over loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate or moderately rapid

*Permeability below a depth of 40 inches:* Very slow to moderately rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 9.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

### ***Properties and Qualities of the Oshtemo Soil***

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 6.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and low for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

## **UgsB—Urban land-Riddles-Oshtemo complex, 1 to 5 percent slopes**

### ***Setting***

*Landform:* Urban land on moraines and till plains

*Position on the landform:* Backslopes, shoulders, and summits

### ***Map Unit Composition***

Urban land—50 percent

The well drained Riddles and similar soils—25 percent

The well drained Oshtemo and similar soils—15 percent

The well drained Metea and similar soils—3 percent

The excessively drained Tyner and similar soils—3 percent

The well drained Crumstown and similar soils—2 percent

The moderately well drained Williamstown and similar soils—2 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Riddles—2e; Oshtemo—3e

*Prime farmland status:* Not prime farmland



**Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

**Properties and Qualities of the Riddles Soil**

*Parent material:* Loamy till over loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate or moderately rapid

*Permeability below a depth of 40 inches:* Very slow to moderately rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 9.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

**Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderately rapid or rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 6.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and low for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

**Ugva—Urban land-Tyner complex, 0 to 1 percent slopes****Setting**

*Landform:* Urban land on outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

**Map Unit Composition**

Urban land—50 percent

The excessively drained Tyner and similar soils—40 percent

The well drained Osolo and similar soils—5 percent

The excessively drained Bristol and similar soils—3 percent

The somewhat excessively drained Coloma and similar soils—2 percent

**Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Tyner—3s

*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

**Properties and Qualities of the Tyner Soil**

*Parent material:* Sandy outwash

*Drainage class:* Excessively drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 4.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 1.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High



## UgVB—Urban land-Tyner complex, 1 to 5 percent slopes

### Setting

*Landform:* Urban land on outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

### Map Unit Composition

Urban land—50 percent

The excessively drained Tyner and similar soils—40 percent

The well drained Osolo and similar soils—5 percent

The excessively drained Bristol and similar soils—3 percent

The somewhat excessively drained Coloma and similar soils—2 percent

### Interpretive Groups

*Land capability classification:* Urban land—None assigned; Tyner—3s

*Prime farmland status:* Not prime farmland

### Properties and Qualities of the Urban Land

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### Properties and Qualities of the Tyner Soil

*Parent material:* Sandy outwash

*Drainage class:* Excessively drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 4.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 1.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

## UgVC—Urban land-Tyner complex, 5 to 10 percent slopes

### Setting

*Landform:* Urban land on outwash plains

*Position on the landform:* Shoulders and backslopes

### Map Unit Composition

Urban land—50 percent

The excessively drained Tyner and similar soils—40 percent

The well drained Osolo and similar soils—5 percent

The excessively drained Bristol and similar soils—3 percent

The somewhat excessively drained Coloma and similar soils—2 percent

### Interpretive Groups

*Land capability classification:* Urban land—None assigned; Tyner—3e

*Prime farmland status:* Not prime farmland

### Properties and Qualities of the Urban Land

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### Properties and Qualities of the Tyner Soil

*Parent material:* Sandy outwash

*Drainage class:* Excessively drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 4.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 1.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### **UgvD—Urban land-Tyner complex, 10 to 18 percent slopes**

#### **Setting**

*Landform:* Urban land on outwash plains

*Position on the landform:* Backslopes

#### **Map Unit Composition**

Urban land—50 percent

The excessively drained Tyner and similar soils—  
40 percent

The excessively drained Bristol and similar soils—  
5 percent

The somewhat excessively drained Coloma and  
similar soils—3 percent

The well drained Osolo and similar soils—2 percent

#### **Interpretive Groups**

*Land capability classification:* Urban land—None  
assigned; Tyner—4e

*Prime farmland status:* Not prime farmland

#### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by  
paved or graveled roads, parking lots, walkways, residential  
and commercial buildings, and cemetery structures.

#### **Properties and Qualities of the Tyner Soil**

*Parent material:* Sandy outwash

*Drainage class:* Excessively drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 4.7 inches to a depth  
of 60 inches

*Content of organic matter in the surface layer:* 0.5 to  
1.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet  
all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Low

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Very low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* High

### **UhmA—Urban land-Hillsdale complex, 0 to 1 percent slopes**

#### **Setting**

*Landform:* Urban land on end moraines

*Position on the landform:* Backslopes, shoulders, and  
summits

#### **Map Unit Composition**

Urban land—50 percent

The well drained Hillsdale and similar soils—  
40 percent

The well drained Oshtemo and similar soils—  
4 percent

The well drained Riddles and similar soils—3 percent

The excessively drained Tyner and similar soils—  
3 percent

#### **Interpretive Groups**

*Land capability classification:* Urban land—None  
assigned; Hillsdale—2e

*Prime farmland status:* Not prime farmland

#### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by  
paved or graveled roads, parking lots, walkways,  
residential and commercial buildings, and cemetery  
structures.

#### **Properties and Qualities of the Hillsdale Soil**

*Parent material:* Coarse-loamy till

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate or  
moderately rapid

*Permeability below a depth of 40 inches:* Moderate or  
moderately rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.7 inches to a depth  
of 60 inches

*Content of organic matter in the surface layer:* 1.0 to  
3.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet  
all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

### **Uhmb—Urban land-Hillsdale complex, 1 to 5 percent slopes**

#### **Setting**

*Landform:* Urban land on end moraines

*Position on the landform:* Backslopes, shoulders,  
and summits

### **Map Unit Composition**

Urban land—50 percent  
 The well drained Hillsdale and similar soils—40 percent  
 The well drained Oshtemo and similar soils—4 percent  
 The well drained Riddles and similar soils—3 percent  
 The excessively drained Tyner and similar soils—3 percent

### **Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Hillsdale—2s  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### **Properties and Qualities of the Hillsdale Soil**

*Parent material:* Coarse-loamy till  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Moderate or moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

### **UhoC—Urban land-Hillsdale-Oshtemo complex, 5 to 10 percent slopes**

#### **Setting**

*Landform:* Urban land on end moraines  
*Position on the landform:* Backslopes

### **Map Unit Composition**

Urban land—50 percent

The well drained Hillsdale and similar soils—30 percent  
 The well drained Oshtemo and similar soils—15 percent  
 The excessively drained Tyner and similar soils—3 percent  
 The well drained Riddles and similar soils—2 percent

### **Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Hillsdale—3e; Oshtemo—3e  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### **Properties and Qualities of the Hillsdale Soil**

*Parent material:* Coarse-loamy till  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Moderate or moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

### **UhoD—Urban land-Hillsdale-Oshtemo complex, 10 to 18 percent slopes**

#### ***Setting***

*Landform:* Urban land on end moraines  
*Position on the landform:* Backslopes

#### ***Map Unit Composition***

Urban land—50 percent  
 The well drained Hillsdale and similar soils—30 percent  
 The well drained Oshtemo and similar soils—15 percent  
 The excessively drained Tyner and similar soils—3 percent  
 The well drained Riddles and similar soils—2 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Hillsdale—4e; Oshtemo—4e  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Hillsdale Soil***

*Parent material:* Coarse-loamy till  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Moderate or moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 8.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and high for concrete  
*Surface runoff class:* Medium

*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

#### ***Properties and Qualities of the Oshtemo Soil***

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

### **UhpC—Urban land-Hillsdale-Tracy complex, 5 to 10 percent slopes**

#### ***Setting***

*Landform:* Urban land on end moraines  
*Position on the landform:* Backslopes

#### ***Map Unit Composition***

Urban land—50 percent  
 The well drained Hillsdale and similar soils—30 percent  
 The well drained Tracy and similar soils—15 percent  
 The excessively drained Tyner and similar soils—3 percent  
 The well drained Riddles and similar soils—2 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Hillsdale—3e; Tracy—3e  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Hillsdale Soil***

*Parent material:* Coarse-loamy till  
*Drainage class:* Well drained



*Permeability to a depth of 40 inches:* Moderate or moderately rapid

*Permeability below a depth of 40 inches:* Moderate or moderately rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Moderately high

### **Properties and Qualities of the Tracy Soil**

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Moderately high

## **UhpD—Urban land-Hillsdale-Tracy complex, 10 to 18 percent slopes**

### **Setting**

*Landform:* Urban land on end moraines

*Position on the landform:* Backslopes

### **Map Unit Composition**

Urban land—50 percent

The well drained Hillsdale and similar soils—30 percent

The well drained Tracy and similar soils—15 percent

The excessively drained Tyner and similar soils—3 percent

The well drained Riddles and similar soils—2 percent

### **Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Hillsdale—4e; Tracy—4e

*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### **Properties and Qualities of the Hillsdale Soil**

*Parent material:* Coarse-loamy till

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate or moderately rapid

*Permeability below a depth of 40 inches:* Moderate or moderately rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and high for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Moderately high

### **Properties and Qualities of the Tracy Soil**

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate



*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* High

*Susceptibility to wind erosion:* Moderately high

### **UhwA—Urban land-Martinsville complex, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Urban land on outwash plains and till plains

*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent

The well drained Martinsville and similar soils—40 percent

The well drained Riddles and similar soils—4 percent

The well drained Crumstown and similar soils—3 percent

The well drained Oshtemo and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Martinsville—1

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Martinsville Soil***

*Parent material:* Loamy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 9.2 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

### **UhwB—Urban land-Martinsville complex, 1 to 5 percent slopes**

#### ***Setting***

*Landform:* Urban land on outwash plains and till plains

*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent

The well drained Martinsville and similar soils—40 percent

The well drained Riddles and similar soils—4 percent

The well drained Crumstown and similar soils—3 percent

The well drained Oshtemo and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Martinsville—2e

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Martinsville Soil***

*Parent material:* Loamy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Low

## **UhwC—Urban land-Martinsville complex, 5 to 10 percent slopes**

### **Setting**

*Landform:* Urban land on outwash plains and till plains

*Position on the landform:* Backslopes

### **Map Unit Composition**

Urban land—50 percent

The well drained Martinsville and similar soils—40 percent

The well drained Oshtemo and similar soils—5 percent

The well drained Riddles and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Martinsville—3e

*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### **Properties and Qualities of the Martinsville Soil**

*Parent material:* Loamy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Low

## **UkaA—Urban land-Maumee complex, 0 to 1 percent slopes**

### **Setting**

*Landform:* Urban land in depressions on lake plains and outwash plains

*Position on the landform:* Toeslopes and footslopes

### **Map Unit Composition**

Urban land—50 percent

The poorly drained Maumee and similar soils—40 percent

The poorly drained Gilford and similar soils—4 percent

The poorly drained Granby and similar soils—4 percent

The somewhat poorly drained Morocco and similar soils—4 percent

### **Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Maumee—3w

*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### **Properties and Qualities of the Maumee Soil**

*Parent material:* Sandy outwash

*Drainage class:* Poorly drained

*Permeability to a depth of 40 inches:* Rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 5.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 2.0 to 4.0 percent

*Shrink-swell potential:* Low

*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (January, February, March, October, November, December)

*Frequency of ponding:* Frequent (January, February, March, April, May, November, December)

*Hydric soil status:* Hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* High for steel and moderate for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

## **UkeA—Urban land-Milford complex, 0 to 1 percent slopes**

### **Setting**

*Landform:* Urban land in depressions on lake plains

*Position on the landform:* Toeslopes and footslopes

**Map Unit Composition**

Urban land—50 percent  
 The poorly drained Milford and similar soils—40 percent  
 The poorly drained Rensselaer and similar soils—4 percent  
 The poorly drained Radioville and similar soils—3 percent  
 The poorly drained Whitepost and similar soils—3 percent

**Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Milford—2w

*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

**Properties and Qualities of the Milford Soil**

*Parent material:* Clayey lacustrine deposits  
*Drainage class:* Poorly drained  
*Permeability to a depth of 40 inches:* Moderately slow or moderate  
*Permeability below a depth of 40 inches:* Moderately slow  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 10.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Moderate  
*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, June, July, November, December)  
*Frequency of ponding:* Frequent (January, February, March, April, May, November, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and low for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

**UkxA—Urban land-Oshtemo complex, 0 to 1 percent slopes****Setting**

*Landform:* Urban land on moraines, till plains, and outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

**Map Unit Composition**

Urban land—50 percent  
 The well drained Oshtemo and similar soils—40 percent  
 The moderately well drained Bronson and similar soils—4 percent  
 The excessively drained Tyner and similar soils—4 percent  
 The well drained Elston and similar soils—2 percent

**Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Oshtemo—3s

*Prime farmland status:* Not prime farmland

**Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

**Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

**UkxB—Urban land-Oshtemo complex, 1 to 5 percent slopes****Setting**

*Landform:* Urban land on moraines, till plains, and outwash plains  
*Position on the landform:* Backslopes, shoulders, and summits

### **Map Unit Composition**

Urban land—50 percent  
 The well drained Oshtemo and similar soils—40 percent  
 The excessively drained Tyner and similar soils—4 percent  
 The somewhat excessively drained Coloma and similar soils—3 percent  
 The well drained Tracy and similar soils—3 percent

### **Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Oshtemo—3e  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Moderately high

### **UkxC—Urban land-Oshtemo complex, 5 to 10 percent slopes**

#### **Setting**

*Landform:* Urban land on moraines and till plains  
*Position on the landform:* Backslopes

### **Map Unit Composition**

Urban land—50 percent  
 The well drained Oshtemo and similar soils—40 percent

The excessively drained Tyner and similar soils—4 percent  
 The somewhat excessively drained Coloma and similar soils—3 percent  
 The well drained Tracy and similar soils—3 percent

### **Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Oshtemo—3e  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### **Properties and Qualities of the Oshtemo Soil**

*Parent material:* Loamy and/or sandy outwash  
*Drainage class:* Well drained  
*Permeability to a depth of 40 inches:* Moderately rapid or rapid  
*Permeability below a depth of 40 inches:* Rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 7.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Depth to seasonal high water table:* More than 6.7 feet all year  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Low for steel and low for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Moderately high

### **UmfB—Urban land-Riddles-Metea complex, 1 to 5 percent slopes**

#### **Setting**

*Landform:* Urban land on till plains  
*Position on the landform:* Shoulders and backslopes

### **Map Unit Composition**

Urban land—50 percent  
 The well drained Riddles and similar soils—25 percent  
 The well drained Metea and similar soils—15 percent  
 The moderately well drained Williamstown and similar soils—4 percent  
 The well drained Ormas and similar soils—3 percent



The well drained Oshtemo and similar soils—  
3 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Riddles—3e; Metea—3e

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Riddles Soil***

*Parent material:* Loamy till over loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate or moderately rapid

*Permeability below a depth of 40 inches:* Very slow to moderately rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 9.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

### ***Soil Properties and Qualities of the Metea Soil***

*Parent material:* Sandy outwash over loamy till

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate to rapid

*Permeability below a depth of 40 inches:* Moderately slow or moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.2 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

### ***UmfC—Urban land-Riddles-Metea complex, 5 to 10 percent slopes***

#### ***Setting***

*Landform:* Urban land on till plains

*Position on the landform:* Shoulders and backslopes

#### ***Map Unit Composition***

Urban land—50 percent

The well drained Riddles and similar soils—25 percent

The well drained Metea and similar soils—15 percent

The moderately well drained Williamstown and similar soils—4 percent

The well drained Ormas and similar soils—3 percent

The well drained Oshtemo and similar soils—3 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Riddles—3e; Metea—3e

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Riddles Soil***

*Parent material:* Loamy till over loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate or moderately rapid

*Permeability below a depth of 40 inches:* Very slow to moderately rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 9.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate



*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Low

### **Properties and Qualities of the Metea Soil**

*Parent material:* Sandy outwash over loamy till

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate to rapid

*Permeability below a depth of 40 inches:* Moderately slow or moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* High

## **UmfD—Urban land-Riddles-Metea complex, 10 to 18 percent slopes**

### **Setting**

*Landform:* Urban land on till plains

*Position on the landform:* Backslopes

### **Map Unit Composition**

Urban land—50 percent

The well drained Riddles and similar soils—25 percent

The well drained Metea and similar soils—15 percent

The moderately well drained Miami and similar soils—4 percent

The well drained Oshtemo and similar soils—3 percent

The excessively drained Tyner and similar soils—3 percent

### **Interpretive Groups**

*Land capability classification:* Urban land—None assigned; Riddles—4e; Metea—4e

*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### **Properties and Qualities of the Riddles Soil**

*Parent material:* Loamy till over loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate or moderately rapid

*Permeability below a depth of 40 inches:* Very slow to moderately rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 9.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* High

*Susceptibility to wind erosion:* Low

### **Properties and Qualities of the Metea Soil**

*Parent material:* Sandy outwash over loamy till

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate to rapid

*Permeability below a depth of 40 inches:* Moderately slow or moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* High

## **UmpA—Urban land-Schoolcraft complex, 0 to 1 percent slopes**

### ***Setting***

*Landform:* Urban land on outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

### ***Map Unit Composition***

Urban land—50 percent

The well drained Schoolcraft and similar soils—40 percent

The well drained Bainter and similar soils—4 percent

The well drained Volinia and similar soils—4 percent

The well drained Elston and similar soils—2 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Schoolcraft—2s

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Schoolcraft Soil***

*Parent material:* Loamy over sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate to rapid

*Permeability below a depth of 40 inches:* Rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Low for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

## **UmuA—Urban land-Southwest complex, 0 to 1 percent slopes**

### ***Setting***

*Landform:* Urban land in depressions on till plains

*Position on the landform:* Toeslopes and footslopes

### ***Map Unit Composition***

Urban land—50 percent

The poorly drained Southwest and similar soils—40 percent

The poorly drained Brookston and similar soils—4 percent

The poorly drained Washtenaw and similar soils—4 percent

The very poorly drained Wunabuna and similar soils—2 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Southwest—2w

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Southwest Soil***

*Parent material:* Fine-silty alluvium over fine-silty glaciofluvial deposits

*Drainage class:* Poorly drained

*Permeability to a depth of 40 inches:* Moderately slow or moderate

*Permeability below a depth of 40 inches:* Moderately slow

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 12.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth, months):* At the surface (April, May)

*Frequency of ponding:* Frequent (January, February, March, April, May, December)

*Hydric soil status:* Hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

### **UmwA—Urban land-Tracy complex, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Urban land on outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent

The well drained Tracy and similar soils—40 percent

The well drained Oshtemo and similar soils—4 percent

The somewhat poorly drained Auten and similar soils—3 percent

The well drained Coupee and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Tracy—2s

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Tracy Soil***

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and high for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

### **UmwB—Urban land-Tracy complex, 1 to 5 percent slopes**

#### ***Setting***

*Landform:* Urban land on outwash plains

*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent

The well drained Tracy and similar soils—40 percent

The well drained Oshtemo and similar soils—5 percent

The well drained Kalamazoo and similar soils—3 percent

The well drained Coupee and similar soils—2 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Tracy—2e

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Tracy Soil***

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and high for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Moderately high

### **UmwC—Urban land-Tracy complex, 5 to 10 percent slopes**

#### ***Setting***

*Landform:* Urban land on outwash plains

*Position on the landform:* Backslopes

#### ***Map Unit Composition***

Urban land—50 percent

The well drained Tracy and similar soils—40 percent

The well drained Oshtemo and similar soils—  
5 percent

The well drained Kalamazoo and similar soils—  
3 percent

The excessively drained Tyner and similar soils—  
2 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Tracy—3e

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Tracy Soil***

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.5 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and high for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Moderately high

### **UmwD—Urban land-Tracy complex, 10 to 18 percent slopes**

#### ***Setting***

*Landform:* Urban land on outwash plains

*Position on the landform:* Backslopes

#### ***Map Unit Composition***

Urban land—50 percent

The well drained Tracy and similar soils—40 percent

The well drained Oshtemo and similar soils—  
5 percent

The excessively drained Tyner and similar soils—  
3 percent

The well drained Spinks and similar soils—2 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Tracy—4e

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Tracy Soil***

*Parent material:* Loamy and/or sandy outwash

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate to rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 8.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 2.0 percent

*Shrink-swell potential:* Low

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and high for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* High

*Susceptibility to wind erosion:* Moderately high

## **UmxA—Urban land-Troxel complex, 0 to 1 percent slopes**

### ***Setting***

*Landform:* Urban land on outwash plains, stream terraces, and till plains

*Position on the landform:* Backslopes, shoulders, and summits

### ***Map Unit Composition***

Urban land—50 percent

The well drained Troxel and similar soils—40 percent

The well drained Elston and similar soils—4 percent

The well drained Coupee and similar soils—3 percent

The well drained Tracy and similar soils—3 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Troxel—1

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Troxel Soil***

*Parent material:* Silty colluvium over loamy drift

*Drainage class:* Well drained

*Permeability to a depth of 40 inches:* Moderate

*Permeability below a depth of 40 inches:* Moderate or moderately rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 13.3 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 3.0 to 5.0 percent

*Shrink-swell potential:* Moderate

*Depth to seasonal high water table:* More than 6.7 feet all year

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* Low for steel and low for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* Low

## **UnoA—Urban land-Whitaker complex, 0 to 1 percent slopes**

### ***Setting***

*Landform:* Urban land on moraines, outwash plains, and till plains

*Position on the landform:* Backslopes, shoulders, and summits

### ***Map Unit Composition***

Urban land—50 percent

The somewhat poorly drained Whitaker and similar soils—40 percent

The somewhat poorly drained Baugo and similar soils—4 percent

The somewhat poorly drained Crosier and similar soils—4 percent

The moderately well drained Williamstown and similar soils—2 percent

### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Whitaker—2w

*Prime farmland status:* Not prime farmland

### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### ***Properties and Qualities of the Whitaker Soil***

*Parent material:* Silty and/or loamy outwash

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Moderate or moderately rapid

*Permeability below a depth of 40 inches:* Moderate or moderately rapid

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 10.9 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and moderate for concrete



*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **UnqB—Urban land-Williamstown-Crosier complex, 1 to 5 percent slopes**

#### ***Setting***

*Landform:* Urban land on moraines and till plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

Urban land—50 percent  
 The moderately well drained Williamstown and similar soils—25 percent  
 The somewhat poorly drained Crosier and similar soils—15 percent  
 The moderately well drained Miami and similar soils—4 percent  
 The well drained Riddles and similar soils—3 percent  
 The somewhat poorly drained Selfridge and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Williamstown—2e; Crosier—2e  
*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Urban Land***

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

#### ***Properties and Qualities of the Williamstown Soil***

*Parent material:* Loamy till over loamy basal till  
*Drainage class:* Moderately well drained  
*Permeability to a depth of 40 inches:* Very slow to moderate  
*Permeability below a depth of 40 inches:* Very slow or slow  
*Depth to restrictive feature:* 20 to 40 inches to dense material  
*Available water capacity:* About 6.1 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Moderate  
*Perched seasonal high water table is highest (depth, months):* 1.5 feet (January, February, March, April, May, June, December)

*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Low

#### ***Properties and Qualities of the Crosier Soil***

*Parent material:* Loamy till over loamy basal till  
*Drainage class:* Somewhat poorly drained  
*Permeability to a depth of 40 inches:* Slow to moderate  
*Permeability below a depth of 40 inches:* Slow  
*Depth to restrictive feature:* 24 to 40 inches to dense material  
*Available water capacity:* About 6.7 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Moderate  
*Perched seasonal high water table is highest (depth, months):* 0.5 foot (March, April)  
*Hydric soil status:* Not hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and low for concrete  
*Surface runoff class:* Medium  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Low

### **UntA—Urban land-Wunabuna complex, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Urban land in depressions on lake plains and till plains  
*Position on the landform:* Toeslopes and footslopes

#### ***Map Unit Composition***

Urban land—50 percent  
 The very poorly drained Wunabuna, drained, and similar soils—40 percent  
 The poorly drained Brookston and similar soils—4 percent  
 The very poorly drained Benadum and similar soils—3 percent  
 The poorly drained Gilford and similar soils—3 percent

#### ***Interpretive Groups***

*Land capability classification:* Urban land—None assigned; Wunabuna—2w  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Urban Land**

Urban land includes land areas that are covered by paved or graveled roads, parking lots, walkways, residential and commercial buildings, and cemetery structures.

### **Properties and Qualities of the Wunabuna, Drained, Soil**

*Parent material:* Clayey alluvium over herbaceous organic material  
*Drainage class:* Very poorly drained  
*Permeability to a depth of 40 inches:* Moderately slow to moderately rapid  
*Permeability below a depth of 40 inches:* Moderately slow to moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 16.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 2.0 to 4.0 percent  
*Shrink-swell potential:* Moderate  
*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, November, December)  
*Frequency of ponding:* Frequent (January, February, March, April, May, November, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* Moderate for steel and low for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **Usl—Udorthents, rubbish**

Areas of Udorthents, rubbish, are sanitary landfills. Because of the extreme variability in the material in these areas, no typical soil series is representative of these areas. Generally, these are areas where rubbish is currently being placed or buried or has previously been placed or buried. Included are areas where demolished building materials were buried and then new developments established including areas used for recreational purposes.

### **Map Unit Composition**

Udorthents, rubbish—100 percent

### **Interpretive Groups**

*Land capability classification:* Udorthents, rubbish—None assigned  
*Prime farmland status:* Not prime farmland

### **WcnAl—Waterford loam, 0 to 2 percent slopes, frequently flooded, long duration**

### **Setting**

*Landform:* Flood plains  
*Position on the landform:* Backslopes, shoulders, summits, toeslopes, and footslopes

### **Map Unit Composition**

The somewhat poorly drained Waterford and similar soils—80 percent  
The moderately well drained Abscota and similar soils—10 percent  
The very poorly drained Adrian and similar soils—5 percent  
The poorly drained Gravelton and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Waterford—5w  
*Prime farmland status:* Not prime farmland

### **Properties and Qualities of the Waterford Soil**

*Parent material:* Loamy alluvium over sandy alluvium  
*Drainage class:* Somewhat poorly drained  
*Permeability to a depth of 40 inches:* Moderately rapid  
*Permeability below a depth of 40 inches:* Moderately rapid or rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 5.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Low  
*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (April, May)  
*Frequency of flooding:* Frequent (January, February, March, April, May, June, November, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* Moderate for steel and low for concrete  
*Surface runoff class:* Very low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **WoaA—Williamstown loam, 0 to 1 percent slopes**

### **Setting**

*Landform:* Moraines and till plains

*Position on the landform:* Backslopes, shoulders, and summits

### **Map Unit Composition**

The moderately well drained Williamstown and similar soils—85 percent  
 The somewhat poorly drained Crosier and similar soils—5 percent  
 The well drained Riddles and similar soils—5 percent  
 The somewhat poorly drained Selfridge and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Williamstown—1

*Prime farmland status:* Prime farmland where drained

### **Properties and Qualities of the Williamstown Soil**

*Parent material:* Loamy till over loamy basal till  
*Drainage class:* Moderately well drained  
*Permeability to a depth of 40 inches:* Very slow to moderate  
*Permeability below a depth of 40 inches:* Very slow or slow  
*Depth to restrictive feature:* 20 to 40 inches to dense material  
*Available water capacity:* About 6.1 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Moderate  
*Perched seasonal high water table is highest (depth, months):* 1.5 feet (January, February, March, April, May, June, December)  
*Hydric soil status:* Not hydric  
*Potential for frost action:* Moderate  
*Hazard of corrosion:* Moderate for steel and moderate for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **WoaB2—Williamstown loam, 1 to 5 percent slopes, eroded**

#### **Setting**

*Landform:* Moraines and till plains

*Position on the landform:* Backslopes, shoulders, and summits

### **Map Unit Composition**

The moderately well drained Williamstown and similar soils—85 percent

The somewhat poorly drained Crosier and similar soils—5 percent

The well drained Riddles and similar soils—5 percent

The somewhat poorly drained Selfridge and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Williamstown—2e

*Prime farmland status:* Prime farmland where drained

### **Properties and Qualities of the Williamstown Soil**

*Parent material:* Loamy till over loamy basal till

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Very slow to moderate

*Permeability below a depth of 40 inches:* Very slow or slow

*Depth to restrictive feature:* 20 to 40 inches to dense material

*Available water capacity:* About 6.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 1.5 feet (January, February, March, April, May, June, December)

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Low

### **WoaC2—Williamstown loam, 5 to 10 percent slopes, eroded**

#### **Setting**

*Landform:* Moraines and till plains

*Position on the landform:* Backslopes

### **Map Unit Composition**

The moderately well drained Williamstown and similar soils—80 percent

The somewhat poorly drained Crosier and similar soils—10 percent

The moderately well drained Miami and similar soils—5 percent

The well drained Riddles and similar soils—5 percent

### ***Interpretive Groups***

*Land capability classification:* Williamstown—3e

*Prime farmland status:* Not prime farmland

#### ***Properties and Qualities of the Williamstown Soil***

*Parent material:* Loamy till over loamy basal till

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Very slow to moderate

*Permeability below a depth of 40 inches:* Very slow or slow

*Depth to restrictive feature:* 20 to 40 inches to dense material

*Available water capacity:* About 6.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 1.5 feet (January, February, March, April, May, June, December)

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Medium

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Low

### **WobB—Williamstown-Crosier loams, 1 to 5 percent slopes**

#### ***Setting***

*Landform:* Moraines and till plains

*Position on the landform:* Summits, backslopes, and shoulders

#### ***Map Unit Composition***

The moderately well drained Williamstown and similar soils—50 percent

The somewhat poorly drained Crosier and similar soils—30 percent

The moderately well drained Miami and similar soils—10 percent

The well drained Riddles and similar soils—5 percent

The somewhat poorly drained Selfridge and similar soils—5 percent

### ***Interpretive Groups***

*Land capability classification:* Williamstown—2e;

Crosier—2e

*Prime farmland status:* Prime farmland where drained

#### ***Properties and Qualities of the Williamstown Soil***

*Parent material:* Loamy till over loamy basal till

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Very slow to moderate

*Permeability below a depth of 40 inches:* Very slow or slow

*Depth to restrictive feature:* 20 to 40 inches to dense material

*Available water capacity:* About 6.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 1.5 feet (January, February, March, April, May, June, December)

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Low

#### ***Properties and Qualities of the Crosier Soil***

*Parent material:* Loamy till over loamy basal till

*Drainage class:* Somewhat poorly drained

*Permeability to a depth of 40 inches:* Slow to moderate

*Permeability below a depth of 40 inches:* Slow

*Depth to restrictive feature:* 24 to 40 inches to dense material

*Available water capacity:* About 6.7 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 0.5 foot (March, April)

*Hydric soil status:* Not hydric

*Potential for frost action:* High

*Hazard of corrosion:* High for steel and low for concrete



*Surface runoff class:* Medium  
*Susceptibility to water erosion:* Moderate  
*Susceptibility to wind erosion:* Low

### **WrxAN—Wunabuna silt loam, drained, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Depressions in lake plains and till plains  
*Position on the landform:* Toeslopes and footslopes

#### ***Map Unit Composition***

The very poorly drained Wunabuna, drained, and similar soils—85 percent  
 The very poorly drained Benadum and similar soils—5 percent  
 The poorly drained Brookston and similar soils—5 percent  
 The poorly drained Gilford and similar soils—5 percent

#### ***Interpretive Groups***

*Land capability classification:* Wunabuna—2w  
*Prime farmland status:* Farmland of statewide importance

#### ***Properties and Qualities of the Wunabuna, Drained, Soil***

*Parent material:* Clayey alluvium over herbaceous organic material  
*Drainage class:* Very poorly drained  
*Permeability to a depth of 40 inches:* Moderately slow to moderately rapid  
*Permeability below a depth of 40 inches:* Moderately slow to moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 16.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 2.0 to 4.0 percent  
*Shrink-swell potential:* Moderate  
*Apparent seasonal high water table is highest (depth, months):* At the surface (January, February, March, April, May, November, December)  
*Frequency of ponding:* Frequent (January, February, March, April, May, November, December)  
*Hydric soil status:* Hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* Moderate for steel and low for concrete  
*Surface runoff class:* Negligible  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **WtbA—Whitaker loam, 0 to 1 percent slopes**

#### ***Setting***

*Landform:* Moraines, outwash plains, and till plains  
*Position on the landform:* Backslopes, shoulders, and summits

#### ***Map Unit Composition***

The somewhat poorly drained Whitaker and similar soils—75 percent  
 The somewhat poorly drained Baugo and similar soils—10 percent  
 The somewhat poorly drained Crosier and similar soils—8 percent  
 The moderately well drained Williamstown and similar soils—7 percent

#### ***Interpretive Groups***

*Land capability classification:* Whitaker—2w  
*Prime farmland status:* Prime farmland where drained

#### ***Properties and Qualities of the Whitaker Soil***

*Parent material:* Silty and/or loamy outwash  
*Drainage class:* Somewhat poorly drained  
*Permeability to a depth of 40 inches:* Moderate or moderately rapid  
*Permeability below a depth of 40 inches:* Moderate or moderately rapid  
*Depth to restrictive feature:* More than 80 inches  
*Available water capacity:* About 10.9 inches to a depth of 60 inches  
*Content of organic matter in the surface layer:* 1.0 to 3.0 percent  
*Shrink-swell potential:* Moderate  
*Apparent seasonal high water table is highest (depth, months):* 0.5 foot (April)  
*Hydric soil status:* Not hydric  
*Potential for frost action:* High  
*Hazard of corrosion:* High for steel and moderate for concrete  
*Surface runoff class:* Low  
*Susceptibility to water erosion:* Low  
*Susceptibility to wind erosion:* Low

### **WujB—Williamstown-Moon complex, 1 to 5 percent slopes**

#### ***Setting***

*Landform:* Moraines and till plains  
*Position on the landform:* Backslopes, shoulders, and summits



### **Map Unit Composition**

The moderately well drained Williamstown and similar soils—45 percent

The moderately well drained Moon and similar soils—40 percent

The well drained Crumstown and similar soils—5 percent

The well drained Metea and similar soils—5 percent

The somewhat poorly drained Selfridge and similar soils—5 percent

### **Interpretive Groups**

*Land capability classification:* Williamstown—2e; Moon—3e

*Prime farmland status:* Prime farmland where drained

### **Properties and Qualities of the Williamstown Soil**

*Parent material:* Loamy till over loamy basal till

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Very slow to moderate

*Permeability below a depth of 40 inches:* Very slow or slow

*Depth to restrictive feature:* 20 to 40 inches to dense material

*Available water capacity:* About 6.1 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 1.0 to 3.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 1.5 feet (January, February, March, April, May, June, December)

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Low

*Susceptibility to water erosion:* Moderate

*Susceptibility to wind erosion:* Low

### **Properties and Qualities of the Moon Soil**

*Parent material:* Sandy outwash over fine-loamy till

*Drainage class:* Moderately well drained

*Permeability to a depth of 40 inches:* Moderate to rapid

*Permeability below a depth of 40 inches:* Moderately slow or moderate

*Depth to restrictive feature:* More than 80 inches

*Available water capacity:* About 7.6 inches to a depth of 60 inches

*Content of organic matter in the surface layer:* 0.5 to 2.0 percent

*Shrink-swell potential:* Moderate

*Perched seasonal high water table is highest (depth, months):* 1.5 feet (January, February, March, April, November, December)

*Hydric soil status:* Not hydric

*Potential for frost action:* Moderate

*Hazard of corrosion:* Moderate for steel and moderate for concrete

*Surface runoff class:* Negligible

*Susceptibility to water erosion:* Low

*Susceptibility to wind erosion:* High

# Use and Management of the Soils

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This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; for agricultural waste management; and as wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

## Interpretive Ratings

The interpretive tables in this survey rate the soils in the survey area for various uses. Many of the tables identify the limitations that affect specified uses and

indicate the severity of those limitations. The ratings in these tables are both verbal and numerical.

## Rating Class Terms

Rating classes are expressed in the tables in terms that indicate the extent to which the soils are limited by all of the soil features that affect a specified use or in terms that indicate the suitability of the soils for the use. Thus, the tables may show limitation classes or suitability classes. Terms for the limitation classes are not limited, somewhat limited, and very limited. The suitability ratings are expressed as *well suited*, *moderately well suited*, *poorly suited*, and *unsuited* or as *good*, *fair*, *poor*, and *very poor*.

## Numerical Ratings

Numerical ratings in the tables indicate the relative severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.00 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use and the point at which the soil feature is not a limitation. The limitations appear in order from the most limiting to the least limiting. Thus, if more than one limitation is identified, the most severe limitation is listed first and the least severe one is listed last.

## Agronomy

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the estimated yields of the main crops and pasture plants are listed for each soil; the system of land capability classification used by the Natural Resources Conservation Service is explained; and prime farmland is described.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be

obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

In 1997, about 154,142 acres in St. Joseph County was used for crops and pasture. About 73,200 acres was used for corn, 50,000 for soybeans, 4,400 for wheat, and 6,800 for hay (Gann and Liles, 2000). The remaining acreage was used for specialty crops such as peppermint, spearmint, seed corn, Christmas trees, onions, potatoes, and other truck crops.

In the 5-year period from 1992 to 1997, the amount of land being farmed in the county dropped from 172,348 acres to 154,142 acres (Gann and Liles, 1994; Gann and Liles, 2000). About 3,000 acres per year is converted from farmland to urban and industrial areas; some of these converted areas are prime farmland.

There is little potential for increasing the cropland in St. Joseph County due to increased urban pressures. Crop production in the county could be increased by applying measures that conserve soil and water and by extending the latest crop production technology to all of the cropland in the county.

The optimal and most beneficial use of the land requires careful planning and good management. Soil limitations and hazards need to be controlled so that the land can be utilized to its fullest potential. In the following paragraphs, the common soil limitations and hazards in the county are discussed.

The paragraphs that follow describe the main management concerns affecting crops and pasture in the survey area and the management practices that have been used successfully.

Soil erosion is a major hazard to the soils of St. Joseph County. Loss of the surface layer through erosion reduces the productivity of these soils. As the surface layer is eroded, nutrients and organic matter are lost and part of the subsoil is incorporated in the plow layer. The subsoil material, which dominantly has a high pH and a low natural fertility level, can restrict seed germination and the availability of plant nutrients. Exposure of the subsoil can increase the hazard of erosion.

Water erosion is a hazard on sloping soils that have a loamy surface layer. Water erosion can result in clogged tile drains and sedimentation in creeks, ditches, and waterways. Sediment that contains fertilizer and pesticides can reduce the quality of the water. Controlling erosion reduces the runoff rate, increases the rate of water infiltration, and minimizes the loss of organic matter and the amount of sediment that enters the waterways.

A system of conservation tillage that leaves crop residue on the surface increases the rate of water

infiltration and reduces the hazards of runoff and erosion. No-till cropping systems require high levels of management. Herbicides and insecticides are used to control weeds and insects. No-till farming is especially effective in minimizing erosion on the lighter colored, well drained sloping soils in the county. It minimizes soil compaction, increases the content of organic matter, and is less labor intensive than other systems. No-till farming has many conservation and ecological benefits, including fuel savings, wildlife enhancement, and improvement of soil tilth.

Grassed waterways are used in areas that have undulating and gently rolling slopes. They help to control gully erosion on sloping soils. They also stabilize areas that are already eroded. Subsurface drains are installed beneath the waterways to remove excess internal water. Removing this water enhances the growth of plants and facilitates the use of machinery. Grassed waterways work effectively on such soils as Crosier, Williamstown, and Miami.

Grade stabilization structures are needed in areas where a change in grade allows water to drop so quickly that erosion occurs. These structures are commonly needed where a grassed waterway enters a ditch.

Water and sediment control basins (WASCoB's), terraces, and diversions help control runoff on gently sloping and moderately sloping soils. WASCoB's and terraces store runoff behind earthen dams until the water can enter subsurface drains. Diversions route water to grassed waterways, which empty into suitable outlets.

Filter strips and riparian buffer strips are vegetative plantings of grasses, shrubs, or trees along watercourses designed to trap sediment before it can get into a watercourse. These practices, sometimes in combination with livestock exclusion fencing, helps greatly to improve water quality.

A protective plant cover helps to control runoff and increases the rate of water infiltration. Plants and roots act as a cushion to absorb the impact of raindrops before they contact the soil. Thus, more water penetrates the surface and less is lost as runoff. A cropping system that keeps crop residue or a plant cover on the surface helps to keep soil losses to a minimum so that the productivity is the soil loss is maintained. Planting winter cover crops and green manure crops on dairy farms and including grasses or legumes in rotation for forage reduce the risk of erosion in sloping areas, provide nitrogen, and improve soil tilth. In 1997, about 5,000 acres were in a rotation of hay or permanent pasture (Gann and Liles, 2000).

Erosion cannot be entirely prevented, but it can be controlled so that it does not diminish the productive

capacity of the soil. When practices are designed for a particular field or farm, several factors should be considered. These factors include the type of farming operation, the soil type, the length and steepness of the slope, the crop rotation, tillage methods, and rainfall patterns. Further information about the design of erosion control measures is available at the local office of the Natural Resources Conservation Service.

## Cropland Limitations and Hazards

The cropland management concerns affecting the use of the soils in the survey area are shown in table 5. The main concerns in managing cropland are controlling erosion; reducing soil wetness and ponding; reducing surface crusting; minimizing clodding; operating equipment safely on steep slopes; and limiting the effects of restricted permeability and low available water capacity.

Some of the limitations and hazards shown in the table cannot be easily overcome. These include *flooding*, *limited rooting depth*, *restricted permeability*, *low available water capacity*, and *subsidence*.

Generally, a combination of several practices is needed to control both *water erosion* and *wind erosion*. Conservation tillage, stripcropping, contour farming, conservation cropping systems, crop residue management, diversions, grassed waterways, and field windbreaks help to minimize excessive soil loss. Soils that have deep or wide gullies are generally not suitable for use as cropland.

*Wetness* is a limitation in some cropland areas, and *ponding* is a hazard. Drainage systems consist of subsurface tile drains, surface inlet tile, open drainage ditches, surface drains, or a combination of these. Measures that maintain the drainage system are needed (fig. 3, fig. 4, and fig. 5). Generally, soils that are ponded for long or very long periods during the growing season are not suitable for use as cropland.

Practices that reduce *surface crusting* and minimize *clodding* include incorporating green manure crops, manure, or crop residue into the soil and using a system of conservation tillage. Surface cloddiness can be minimized by avoiding tillage when the soils are too wet.

Measures that conserve moisture are needed in areas where the soils have a *low or moderate available water capacity*. These measures primarily involve reducing the evaporation and runoff rates and increasing the rate of water infiltration. Applying conservation tillage and conservation cropping systems, farming on the contour, stripcropping, establishing field windbreaks, and leaving crop residue on the surface conserve moisture.

Both a *low pH* and a *high pH* (soil reaction) inhibit the uptake of certain nutrients by the plants or accelerate the absorption of certain other elements to the level of toxic concentrations. Either of these conditions affects the health and vigor of plants. For a low pH, applications of lime should be based on the results of soil tests. The goal is to achieve the optimum pH level for the uptake of the major nutrients by the specific crop. Generally, the natural reaction in the surface layer of most of the soils in the area is a low pH, except for some soils on flood plains. For most soils in the area, the pH should be raised to an optimal level for the crop being grown. In contrast, soils with a high pH may need treatment to lower the pH so that certain elements are adequately available for specific crop use.

Some soils have an *equipment limitation* because of the slope. In areas where slopes are 15 percent or more, the operation of farm equipment may be restricted and could become hazardous. Generally, soils with an average slope of 18 percent or more are not suitable for use as cropland.

Areas in which 3 percent or more of the surface is covered with stones or boulders have an *equipment limitation*. Large rock fragments on the surface can limit the type of equipment that can be used or can damage equipment during planting operations. Soils that have a gravelly or cobbly surface layer also have an *equipment limitation*.

*Limited rooting depth* and the available moisture for plant growth are limited by root-restricting layers, such as bedrock, a fragipan, dense till, or stratified sand and gravel, within a depth of 40 inches.

Crops can be damaged if the soil is subject to occasional or frequent periods of *flooding* during the growing season. Small grain crops grown in the winter are especially susceptible to damage. Water-tolerant species should be used in areas subject to flooding during the growing season.

*Subsidence* is the loss or settlement of the organic soil layers through oxidation of the organic soil material. Saturating the organic layers by raising the water table during the noncropping season can minimize the oxidation of organic soil layers.

The following is an explanation of the criteria used to determine the limitations or hazards.

**Clodding.**—The soil has 35 percent or more clay in the surface layer.

**Crusting.**—The content of organic matter in the surface layer is less than or equal to 2 percent, the percent passing the number 200 sieve is more than 50 percent, and the content of clay is less than or equal to 32 percent.





Figure 3.—Corn growing on Houghton muck, drained, 0 to 1 percent slopes.

*Equipment limitation.*—The soil has an average slope of 15 percent or more; or the soil has stones or boulders that cover 3 percent or more of the surface; or the surface layer contains 15 percent or more rock fragments.

*Flooding.*—The soil is subject to occasional or frequent periods of flooding during the growing season.

*High pH.*—Soils that naturally have high pH or high reaction, typically a pH value equal to or more than 7.4 in the surface layer.

*Limited rooting depth.*—Root-restricting layers, such as bedrock, a fragipan, dense till, and stratified sand and gravel, are within a depth of 40 inches.

*Low available water capacity.*—The weighted average of the available water capacity is equal to or more than 0.05 inch but less than 0.10 inch of water per inch of soil within a depth of 60 inches.

*Low pH.*—Soils that naturally have low pH or low reaction, typically a pH value equal to or less than 6.0 in the surface layer.

*Moderate available water capacity.*—The weighted average of the available water capacity is equal to or more than 0.10 inch but less than 0.15 inch of water per inch of soil within a depth of 60 inches.

*Ponding.*—The soil is subject to occasional or frequent periods of ponding during the growing season.

*Restricted permeability.*—Permeability of the soil is less than 0.2 inch per hour in one or more layers within a depth of 40 inches.

*Subsidence.*—The soil has an organic layer within a depth of 60 inches.

*Water erosion.*—The erodibility factor of the surface layer (Kf or Kw) multiplied by the slope is greater than 0.8, and the average slope is 3 percent or more.

*Wetness.*—The soil has a water table within a depth of 1.5 feet of the surface during the growing season.

*Wind erosion.*—The soil is in wind erodibility group 1 or 2 (or in group 3 if the soil is not on a flood plain).

Erodibility factors (e.g., Kf or Kw) and wind erodibility groups are described under the heading “Physical Properties.”



## Pasture Limitations and Hazards

Growing legumes, cool-season grasses, and warm-season grasses that are suited to the soils and the climate of the area helps to maintain a productive stand of pasture (fig. 6 and fig. 7).

The pastureland management concerns affecting the use of the soils in the survey area are shown in table 5. The main management concerns affecting pasture are erosion hazard, equipment limitation, wetness and ponding, trafficability, and low or very low available water capacity.

Some of the limitations and hazards shown in the table cannot be easily overcome. These are *depth to bedrock*, *low or very low available water capacity*, *subsidence*, and *flooding*.

Also, the majority of the soils suitable for growing legumes have a high potential for frost action. The local office of the Natural Resources Conservation Service or the Cooperative Extension Service can provide information about legumes subject to damage from frost heave. This hazard is not listed

in table 6 because it applies to the majority of the soils.

Both *water erosion* and *wind erosion* reduce the productivity of pastureland. Controlling erosion during seedbed preparation is a major concern. If the soil is tilled for the reseeding of pasture or hay crops, planting winter cover crops, establishing grassed waterways, planting field windbreaks, farming on the contour, and using a system of conservation tillage that leaves a protective cover of crop residue on the surface can help to minimize erosion. Soils that have deep or wide gullies are generally not suitable for use as pasture.

*Wetness* is a limitation in some pastured areas, and *ponding* is a hazard. Drainage systems consist of subsurface tile drains, surface inlet tiles, open drainage ditches, surface drains, or a combination of these. Measures that maintain the drainage system are needed. Generally, soils that are ponded for long or very long periods during the growing season are not suitable for pasture. Overgrazing or grazing when the soil is wet reduces the extent of plant cover and



Figure 4.—Soybeans growing on Crosier loam, 0 to 1 percent slopes, in the swells and Brookston loam, 0 to 1 percent slopes, in the swales.



Figure 5.—Mint is a common crop grown on muck soils. This mint is growing on Henrietta muck, drained, 0 to 1 percent slopes.

results in surface compaction, and thus it increases the susceptibility to erosion. Proper stocking rates, rotation grazing, and timely deferment of grazing, especially during wet periods, help to keep the pasture in good condition.

*Subsidence* is the loss or settlement of the organic soil layers through oxidation of the organic soil material. Saturating the organic layers by raising the water table during the noncropping season can minimize the oxidation of organic soil layers.

*Trafficability* of both livestock and machinery across the soil is a limitation for soils that have a *wetness* limitation along with a loamy, clayey, or organic surface layer. The proper location of livestock facilities (watering, feeding, and shelter) helps to minimize surface compaction or the formation of ruts and thus helps to prevent damage to the pasture crops.

Some soils have an *equipment limitation* because of the slope. In areas where slopes are 15 percent or more, the operation of farm equipment may be restricted and could become hazardous. Generally,

soils with an average slope of 25 percent or more are not suitable for use as pasture.

Areas in which 3 percent or more of the surface is covered with stones or boulders have an *equipment limitation*. Large rock fragments on the surface can limit the type of equipment that can be used or can damage equipment during reseeding and planting operations. Soils that have a gravelly or cobbly surface layer also have an *equipment limitation*.

Soils that have root-restricting layers, such as bedrock, a fragipan, dense till, and stratified sand and gravel, within a depth of 40 inches have *limited rooting depth* and limited available water for plant growth. Available water capacity refers to the capacity of soils to hold water available for use by most plants. The quality and quantity of the pasture may be reduced for soils that have *low or very low available water capacity*. The soil moisture may be inadequate for the maintenance of a healthy community of desired pasture species and, thus, the desired number of livestock. A poor quality pasture may increase the hazard of erosion and increase the runoff of pollutants.



Planting drought-resistant species of grasses and legumes helps to establish a cover of vegetation. Irrigation may be needed.

Both a *low pH* and a *high pH* (soil reaction) inhibit the uptake of certain nutrients by the plants or accelerate the absorption of certain other elements to the level of toxic concentrations. Either of these conditions affects the health and vigor of plants. For a low pH, applications of lime should be based on the results of soil tests. The goal is to achieve the optimum pH level for the uptake of the major nutrients by the specific grass, legume, or combination of grasses and legumes.

The following is an explanation of the criteria used to determine the limitations or hazards.

*Equipment limitation.*—The soil has an average slope of 15 percent or more; or the soil has stones or boulders that cover 3 percent or more of the surface; or the surface layer contains 15 percent or more rock fragments.

*Flooding.*—The soil is subject to occasional or frequent periods of flooding during the growing season.

*High pH.*—Soils that naturally have high pH or high reaction, typically a pH value equal to or more than 7.4 in the surface layer.

*Limited rooting depth.*—Root-restricting layers, such as bedrock, a fragipan, dense till, and stratified sand and gravel, are within a depth of 40 inches.

*Low or very low available water capacity.*—The weighted average of the available water capacity is less than 0.10 inch of water per inch of soil within a depth of 60 inches.

*Low pH.*—Soils that naturally have low pH or low reaction, typically a pH value equal to or less than 6.0 in the surface layer.

*Ponding.*—The soil is subject to occasional or frequent periods of ponding during the growing season.

*Subsidence.*—The soil has an organic layer within a depth of 60 inches.

*Trafficability limitation.*—The soil is somewhat poorly drained, poorly drained, or very poorly drained, and the surface layer is loamy, clayey, or organic soil material.



Figure 6.—Dairy cows are a common sight in St. Joseph County. Pasture in an area of Miami clay loam, 5 to 10 percent slopes, severely eroded.



Figure 7.—Horses are common around St. Joseph County. Horses in a pasture on Brookston loam, 0 to 1 percent slopes.

*Water erosion.*—The erodibility factor of the surface layer (Kf or Kw) multiplied by the slope is greater than 0.8, and the average slope is 3 percent or more.

*Wetness.*—The soil is poorly drained or very poorly drained.

*Wind erosion.*—The soil is in wind erodibility group 1 or 2 (or group 3 if the soil is not on a flood plain).

Erodibility factors (e.g., Kf or Kw) and wind erodibility groups are described under the heading “Physical Properties.”

## Yields per Acre

The average yields per acre that can be expected for the principal crops under a high level of management are shown in table 6. The principal crops are corn, soybeans, winter wheat, grass-legume hay, and pasture. Yields for each map unit are based on a composit average of all soil components that are typically in the map unit. In any given year, yields may be higher or lower than those indicated in the table. These differences are the result of variations in rainfall

and other climatic factors; varieties grown; environmental factors, such as plant diseases and insect infestations; and type of fertility program. The land capability classification of map units in the survey area also is shown in the table.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed and implemented. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide additional information about the management and productivity of the soils for those crops.

The estimated yields in table 6 were calculated based on a specific value for corn yields, and the yields for the other crops listed are calculated as a percentage relative to the corn yield.

## Pasture and Hayland Interpretations

Under good management, proper grazing is essential for the production of high quality forage, stand survival, and erosion control. Proper grazing helps plants to maintain sufficient and generally vigorous growth during the growing season. Brush control is essential in many areas, and weed control generally is needed. Rotation grazing and renovation also are important management practices.

Yield estimates are often provided in animal unit months (AUM), or the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

The estimated grass-legume hay and pasture yields in table 6 were calculated based on a specific value for corn yields and are calculated as a percentage relative to the corn yield.

Yields for hay and pasture crops vary widely based on the type and combination of grass and legume crops grown.

The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about forage yields other than those shown in table 6.

## Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops (fig. 8). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and

limitations of groups of soils for forestland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey (USDA, 1961).

*Capability classes*, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

*Capability subclasses* are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, 2*e*. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class 5 are subject to little or no





Figure 8.—Wheat growing in an area of Oshtemo sandy loam, 0 to 1 percent slopes.

erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

The capability classification of map units in this survey area is given in table 6.

### Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land,

pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime

farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 7. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

### Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, yards, fruit trees, gardens, and cropland from wind and snow; help to keep snow on fields; and provide food and

cover for wildlife. Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil (fig. 9).

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Table 8 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in the table are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or of the Cooperative Extension Service or from a commercial nursery.



**Figure 9.—Windbreaks are used as an important tool to fight wind erosion. This windbreak is growing in an area of Tracy sandy loam, 1 to 5 percent slopes.**

## Forestland

The tables in this section can help forest owners or managers plan the use of soils for wood crops. They show the potential productivity of the soils for wood crops and rate the soils according to the limitations that affect various aspects of forest management.

### Forestland Productivity

In table 9, the *potential productivity* of merchantable trees or *local plant names* on a soil is expressed as a site index and as a volume number (fig. 10 and fig. 11).

The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. More detailed information regarding site index is available in the "National Forestry Manual" (USDA, National Forestry Manual), which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

*Trees to plant* are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

### Forestland Management

In tables 10a, 10b, 10c, and 10d, interpretive ratings are given for various aspects of forestland management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. *Well suited* indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the

unfavorable properties requires special design, extra maintenance, and costly alteration.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified forest management practice (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for fire damage and seedling mortality are expressed as *low*, *moderate*, and *high*. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils for forest management practices. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual" (USDA, National Forestry Manual), which is available in local offices of the Natural Resources Conservation Service or on the Internet.

For *limitations affecting construction of haul roads and log landings*, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of *slight* indicates that no significant limitations affect construction activities, *moderate* indicates that one or more limitations can cause some difficulty in construction, and *severe* indicates that one or more limitations can make construction very difficult or very costly.

The ratings of *suitability for log landings* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forest equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.





**Figure 10.—Forestland management is important for soil conservation. Trees growing in an area of Brookston loam, 0 to 1 percent slopes.**

Ratings in the column *hazard of off-road or off-trail erosion* are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of

*slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance; and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or



poorly suited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

## Recreation

There are a number of state and county parks within St. Joseph County. These include Potato Creek

State Park, Chamberlain Lake Nature Preserve; Bendix Woods, Ferrettie-Baugo Creek, and St. Patrick's county parks; and Spicer Lake Nature Preserve. There are also numerous city, town, township, and privately managed parks. These parks offer visitors and residents of St. Joseph County a wide variety of recreational opportunities.

The soils of the survey area are rated in tables 11a and 11b according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specific use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one



Figure 11.—Snow-covered trees growing in an area of Crosier loam, 0 to 1 percent slopes.

or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of the flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

*Camp areas* require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

*Picnic areas* are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil

properties that affect the ease of developing picnic area and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

*Playgrounds* require soils that are nearly level, are free of stones, and can withstand intensive foot traffic. The ratings are based on the soil properties that affect the ease of developing playgrounds and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of playgrounds. For good trafficability, the surface of the playgrounds should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

*Paths and trails* for hiking and horseback riding should require little or no slope modification through cutting or filling. The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

*Off-road motorcycle trails* require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, slope, depth to a water table, ponding, flooding, and texture of the surface layer.

*Golf fairways* are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonates; and

sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

The information in tables 11a and 11b can be supplemented by other information in this survey, for example, interpretations for building site development, sanitary facilities, and construction materials.

## Wildlife Habitat

Rick Ward, district wildlife biologist, Indiana Department of Natural Resources, Division of Fish and Wildlife, helped prepare this section.

Wildlife plays an important role in the quality of life for the people of St. Joseph County. Most people enjoy watching wildlife. For others, fishing, hunting, or trapping are important recreational pursuits. Wildlife can also be an indicator of the health of our environment.

There are three basic types of wildlife habitat—upland, woodland, and wetland. Upland habitat is generally open grasslands with some shrubs that occur on dry to medium soils. Woodland habitat is composed primarily of forestlands and may include areas of wetlands or grasslands. Wetland habitat is marsh, pond, lake, river, stream, or ditch areas and may be wet seasonally or year round. The interplay of soil type, moisture regime, and vegetation largely determines what species or group of species of wildlife can live in a particular habitat.

Typical upland wildlife species are bobwhite quail, ring-necked pheasants, cottontail rabbits, and songbirds such as meadowlarks, bobolinks, and dickcissels. Management practices on upland areas that benefit wildlife may include the planting of grain food plots or leaving a small portion of a crop unharvested near good cover. Cool-season (pasture-type) grasses, clovers, and legumes can be planted and managed as food sources, nesting areas, firebreaks, travel and access areas, and bugging areas for young birds. Warm-season (prairie type) grasses and forbs can be planted and managed as winter cover, nesting cover, and a place to escape predators. Big bluestem, little bluestem, switchgrass, and Indiangrass are the four main species of warm-season grasses. Forbs species may include coreopsis, coneflower, leadplant, lespedezas, milkweeds, and goldenrods.

Native shrub species can be planted to create fence rows, improve existing fence rows, or as part of a woodland planting. Shrubs benefit wildlife by

providing food sources, cover, and nesting areas. On wetter soils, shrubs such as elderberry, winterberry, redosier dogwood, gray dogwood, ninebark, and chokeberry can be planted. On drier soils, shrubs such as round-leaved dogwood, flowering dogwood, chokecherry, redbud, hazelnut, or black haw can be planted. Many other native species of shrubs are beneficial to a wide variety of wildlife.

Typical woodland wildlife species are fox squirrels, white-tailed deer, wild turkeys, woodpeckers, hawks and owls, and songbirds such as chickadees, brown creepers, kinglets, orioles, and wood thrushes. Management practices on woodland areas that benefit wildlife may include adding shrubs to a reforestation planting, leaving brush piles after timber harvest, and allowing some grapevines to grow. A well-managed timber harvest can benefit wildlife by promoting growth of new plants after an overstory tree is removed.

On wetter sites, trees such as hackberry, sweetgum, pin oak, green ash, or swamp white oak may be planted to benefit wildlife. In drier sites, white ash, black cherry, shagbark hickory, white oak, and bur oak may be planted. Many other native tree species are beneficial to a wide variety of wildlife as food sources, cover, and nesting sites.

Typical wetland wildlife species are nesting and migratory waterfowl such as mallards, wood ducks, and Canada Geese, beavers and muskrats, great blue herons and other migratory shorebirds, frogs, and turtles. Songbird species that use wetland areas would include red-winged blackbirds, kingfishers, swamp sparrows, bank swallows, and marsh wrens. Management practices on wetland areas may include restoring the hydrology of a previously drained site to make a permanent wetland, creating a wetland on a new site, improving the water-holding capacity of a site, or managing the vegetation to maximize the variety of plants growing on the site. Wetlands benefit people by storing floodwater, filtering runoff, protecting areas from erosion, recharging ground water, and providing recreational areas. Wetlands with 4 feet or less of water are the most beneficial for the greatest variety of wildlife. Many projects now contain a deeper pond area to benefit fish and a shallower area to benefit other wetland species.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water (fig. 12). Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.



Technical assistance is available to landowners through the Indiana Department of Natural Resources, Divisions of Fish and Wildlife and Forestry, and through offices of the Natural Resources Conservation Service.

In table 12, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for

satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible (Allan and others, 1963).

The elements of wildlife habitat are described in the following paragraphs.

*Grain and seed crops* are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

*Grasses and legumes* are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes



Figure 12.—Wildlife habitat in areas of Wunabuna silt loam, drained, 0 to 1 percent slopes, and Adrian muck, drained, 0 to 1 percent slopes.



are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are timothy, orchard grass, lovegrass, brome grass, clover, and alfalfa.

*Wild herbaceous plants* are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggar tick, wildrye, and sedge.

*Hardwood trees and woody understory* produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, and hickory.

*Coniferous plants* furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

*Wetland plants* are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds.

*Shallow water areas* have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

*Habitat for openland wildlife* consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

*Habitat for woodland wildlife* consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

*Habitat for wetland wildlife* consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

## Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed. The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Buol and others, 1980; Cowardin and others, 1979; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1995). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation (fig. 13).

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2003) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils.



**Figure 13.—Houghton muck, undrained, 0 to 1 percent slopes, is one of the many hydric soils in St. Joseph County. These areas provide good habitat for wetland wildlife**

The indicators that can be used to make onsite determinations of hydric soils in St. Joseph County are specified in “Field Indicators of Hydric Soils in the United States” (USDA, 1998).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil description, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if one (or more) of the approved indicators is present.

This survey can be used to locate probable areas of hydric soils.

The following map units meet the definition of hydric soils and in addition have at least one of the hydric soil indicators. This list can help in planning land uses;

however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; USDA, 1998).

- AatAN—Ackerman muck, drained, 0 to 1 percent slopes
- AbhAN—Adrian muck, drained, 0 to 1 percent slopes
- AbhAU—Adrian muck, undrained, 0 to 1 percent slopes
- ApuAN—Antung muck, drained, 0 to 1 percent slopes
- BuuA—Brookston loam, 0 to 1 percent slopes
- CmbAI—Cohoctah loam, 0 to 1 percent slopes, frequently flooded, brief duration
- EchAN—Edwards muck, drained, 0 to 1 percent slopes
- EchAU—Edwards muck, undrained, 0 to 1 percent slopes
- EcrAN—Edselton muck, drained, 0 to 1 percent slopes
- EcrAU—Edselton muck, undrained, 0 to 1 percent slopes
- GczA—Gilford sandy loam, 0 to 1 percent slopes
- GdnA—Gilford mucky sandy loam, 0 to 1 percent slopes

HfbAN—Henrietta muck, drained, 0 to 1 percent slopes  
 HfbAU—Henrietta muck, undrained, 0 to 1 percent slopes  
 HtbAN—Houghton muck, drained, 0 to 1 percent slopes  
 HtbAU—Houghton muck, undrained, 0 to 1 percent slopes  
 MfrAN—Madaus muck, drained, 0 to 1 percent slopes  
 MfrAU—Madaus muck, undrained, 0 to 1 percent slopes  
 MgcA—Maumee loamy sand, 0 to 1 percent slopes  
 MgdAN—Martisco muck, drained, 0 to 1 percent slopes  
 MhaA—Maumee loamy fine sand, 0 to 1 percent slopes  
 MhbA—Maumee mucky loamy fine sand, 0 to 1 percent slopes  
 MouA—Milford silty clay loam, 0 to 1 percent slopes  
 MvhAN—Moston muck, drained, 0 to 1 percent slopes  
 MvhAU—Moston muck, undrained, 0 to 1 percent slopes  
 MwzAN—Muskego muck, drained, 0 to 1 percent slopes  
 MwzAU—Muskego muck, undrained, 0 to 1 percent slopes  
 PaaAN—Palms muck, drained, 0 to 1 percent slopes  
 PaaAU—Palms muck, undrained, 0 to 1 percent slopes  
 QuiA—Quinn loam, 0 to 1 percent slopes  
 QujA—Quinn sandy loam, 0 to 1 percent slopes  
 RenA—Rensselaer mucky loam, 0 to 1 percent slopes  
 ReyA—Rensselaer loam, 0 to 1 percent slopes  
 SniA—Southwest silt loam, 0 to 1 percent slopes  
 WcnAI—Waterford loam, 0 to 2 percent slopes, frequently flooded, long duration  
 WrxAN—Wunabuna silt loam, drained, 0 to 1 percent slopes

The list above shows all the soils that are classified as being hydric in St. Joseph County. Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions of the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

## Engineering

This section provides information for planning land uses related to urban development and to waste management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, and

construction materials. The ratings are based on observed performance of the soils and on the data in the tables (USDA, National Engineering Handbook) described under the heading “Soil Properties.”

*Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.*

*The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.*

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

## Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Table 13a shows the degree and kind of soil limitations that affect dwellings with and without basements, and small commercial buildings. Table 13b shows the degree and kind of soil limitations that affect local roads and streets, shallow excavations, and lawns and landscaping.

The ratings in the tables are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect building site development. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

*Dwellings* are single-family houses of three stories or less. For dwellings without basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet. The ratings for dwellings are

based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

*Small commercial buildings* are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at a depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

*Local roads and streets* have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or to a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

*Shallow excavations* are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties that influence the ease of



digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to a seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to a water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

*Lawns and landscaping* require soils on which turf and ornamental trees and shrubs can be established and maintained (fig. 14). Irrigation is not considered in the ratings. The ratings are based on soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonates; and sulfidic materials. Flooding, depth to water table,

ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

## Sanitary Facilities

Tables 14a and 14b show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one



Figure 14.—Turf grass is produced in several areas in St. Joseph County. This turf grass is growing in an area of Coupee silt loam, 0 to 1 percent slopes.

or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

*Septic tank absorption fields* are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the adsorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

*Sewage lagoons* are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of effluent can result in the contamination of the ground water. Ground-water contamination is also a hazard if fractured

bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

*A trench sanitary landfill* is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as a daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used in the final cover for the trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final

cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

*Daily cover for landfill* is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for the landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, or a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

## Waste Management

Soil properties are important when organic waste is applied as fertilizer and waste-water is applied in irrigated areas. They also are important when the soil is used as a medium for the treatment and disposal of the organic waste and waste-water. Unfavorable soil properties can result in environmental damage.

The use of organic waste and waste-water as production resources results in the conservation of energy and resources and minimizes the problems associated with waste disposal. If disposal is the goal, applying a maximum amount of the organic waste or the waste-water to a minimal area holds costs to a minimum and environmental damage is the main hazard. If reuse is the goal, a minimum amount should be applied to a maximum area and environmental damage is unlikely.

Interpretations developed for waste management may include ratings for manure- and food-processing waste, municipal sewage sludge, use of waste-water for irrigation, and treatment of waste-water by slow rate, overland flow, and rapid infiltration processes. Specific information regarding waste management is available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

## Construction Materials

Tables 15a and 15b give information about the soils as potential sources of gravel, sand, reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

*Gravel* and *sand* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 15a, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of gravel or sand are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the lowest layer of the soil contains gravel or sand, the soil is rated as a probable source regardless of thickness. The assumption is that the gravel or sand layer below the depth of observation exceeds the minimum thickness.

The soils are rated *good*, *fair*, or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that

the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

The soils are rated *good*, *fair*, or *poor* as potential sources of reclamation material, roadfill, and topsoil. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, or topsoil. The lower the number, the greater the limitation.

*Reclamation material* is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

*Roadfill* is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the whole soil, from the surface to a depth of about 5 feet. It is assumed that soil layers

will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

*Topsoil* is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.





# Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are ascertained by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties, physical and chemical properties, and pertinent soil and water features.

## Engineering Index Properties

Table 16 gives the engineering classifications and the range of index properties for the layers of each soil in the survey area.

*Depth* to the upper and lower boundaries of each layer is indicated.

*Texture* is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter (fig. 15). "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Representative values for texture are indicated with an asterisk. These representative values are indicative of textures that occur most commonly. Textural terms are defined in the Glossary.

*Classification* of the soils is determined according to the Unified soil classification system (ASTM, 2001)

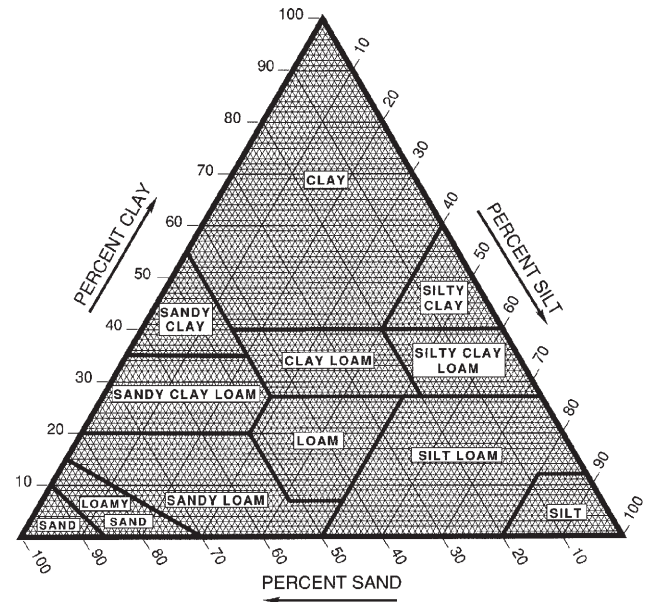


Figure 15.—Percentages of clay, silt, and sand in the basic USDA soil textural classes.

and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2000). Representative values for Unified and AASHTO are indicated with an asterisk.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and

plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 16.

*Rock fragments* larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

*Percentage (of soil particles) passing designated sieves* is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

*Liquid limit and plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of particle-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

## Physical Properties

Tables 17a and 17b show estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

*Depth* to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as

classes with specific effective diameter class limits. The broad classes are sand, silt, and clay ranging from the larger to the smaller.

*Sand* as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In table 17a, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

*Silt* as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In table 17a, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

*Clay* as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 17a, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

*Moist bulk density* is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at  $\frac{1}{3}$ -bar (33 kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

*Permeability* ( $K_{sat}$ ) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity ( $K_{sat}$ ). The estimates in the table indicate

the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

*Available water capacity* refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect the retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

*Linear extensibility* refers to the change in length of an unconfined clod as moisture content is decreased from a moist to dry state. It is an expression of the volume change between the water content of a clod at  $\frac{1}{3}$ -bar tension (33 kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

*Organic matter* is the plant and animal residue in the soil at various stages of decomposition. In table 17a, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

*Erosion factors* are shown in table 17b as the K factor ( $K_w$  and  $K_f$ ) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to

predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

*Erosion factor  $K_w$*  indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

*Erosion factor  $K_f$*  indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

*Erosion factor T* is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

*Wind erodibility groups* are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.
- 4L. Calcareous loams, silt loams, clay loams, and silty clay loams.
4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to wind erosion because of rock fragments on the surface or because of surface wetness.

*Wind erodibility index* is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size



and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

*Slope length* is the horizontal distance from the origin of overland flow to the point where either the slope gradient decreases enough that deposition begins or runoff becomes concentrated in a defined channel. The slope length is given as a representative value (rv). Representative values are indicative of conditions that occur most commonly.

*Slope gradient* is the difference in elevation between two points and is expressed as a percentage of the distance between those points. For example, a difference in elevation of 1 meter over a horizontal distance of 100 meters is a slope of 1 percent. The slope gradient is given as a representative value (rv). Representative values are indicative of conditions that occur most commonly.

## Chemical Properties

Table 18 shows estimates of *cation-exchange capacity*, *effective cation-exchange capacity*, *soil reaction*, and *calcium carbonate equivalent*.

Depth to the upper and lower boundaries of each layer is indicated.

*Cation-exchange capacity* is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

*Effective cation-exchange capacity* refers to the sum of extractable bases plus aluminum expressed in term of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

*Soil reaction* is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

*Calcium carbonate equivalent* is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

## Water Features

Table 19 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations (fig. 16 and fig. 17).

*Hydrologic soil groups* are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

The *months* in the table indicate the portion of the year in which the feature is most likely to be a concern.

*Water table* refers to a saturated zone in the soil. Table 19 indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

*Ponding* is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 19 indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to



**Figure 16.—Pumps are used to drain Moston and Muskego soils in areas where these soils are in low positions on the landscape in relation to drainage outlets.**

7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

*Flooding* is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

*Duration and frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that

it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it is likely to occur often under normal weather conditions (the chance of ponding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

## Soil Features

Table 20 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

*Subsidence* is the settlement of organic soils or of saturated mineral soils of very low density. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

*Potential for frost action* is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture,



Figure 17.—Rensselaer loam, 0 to 1 percent slopes, surrounds this stream, one of many in St. Joseph County.

density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

*Risk of corrosion pertains* to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion

of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.



# Classification of the Soils

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The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999; Soil Survey Staff, 2003). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 21 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

**ORDER.** Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Alfisol.

**SUBORDER.** Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalf (*Ud*, meaning humid, plus *alf*, from Alfisol).

**GREAT GROUP.** Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Hapludalfs (*Hapl*, meaning minimal horizonation, plus *udalf*, the suborder of the Alfisols that has a udic moisture regime).

**SUBGROUP.** Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that

typifies the great group. An example is Typic Hapludalfs.

**FAMILY.** Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, active, mesic Typic Hapludalfs.

**SERIES.** The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

## Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Field Book for Describing and Sampling Soils" (Schoeneberger and others, 2002) and the "Soil Survey Manual" (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 2003). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

### *Abscota Series*

*Taxonomic classification:* Mixed, mesic  
Oxyaquic Udipsamments



### Typical Pedon for the Series

Abscota loamy sand, on a convex slope of 2 percent, in a wooded area on a flood plain at an elevation of 671 feet; Kent County, Michigan; about 2 miles south of Wyoming; 1,600 feet south and 2,500 feet east of the northwest corner of sec. 12, T. 5 N., R. 12 W.; USGS Cutlerville, Michigan, topographic quadrangle; lat. 42 degrees 50 minutes 11 seconds N. and long. 85 degrees 40 minutes 24 seconds W., NAD 27; UTM Zone 16, 608424 Easting and 4743285 Northing, NAD 83.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) loamy sand, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; many roots; slightly acid; abrupt wavy boundary.

Bw1—5 to 11 inches; yellowish brown (10YR 5/4) loamy sand; weak coarse subangular blocky structure; very friable; common roots; slightly acid; clear smooth boundary.

Bw2—11 to 14 inches; light yellowish brown (10YR 6/4) loamy sand; weak medium subangular blocky structure; very friable; common roots; slightly acid; clear smooth boundary.

C1—14 to 28 inches; light yellowish brown (10YR 6/4) sand; single grain; loose; few roots; slightly acid; clear smooth boundary.

C2—28 to 38 inches; pale brown (10YR 6/3) sand; single grain; loose; few roots; common coarse faint yellowish brown (10YR 5/4) masses that have accumulated iron oxide and are in the matrix; slightly acid; clear smooth boundary.

C3—38 to 48 inches; light yellowish brown (10YR 6/4) sand; single grain; loose; many coarse very dark grayish brown (10YR 3/2) organic stains; slightly acid; clear smooth boundary.

C4—48 to 52 inches; yellowish brown (10YR 5/6) sand; single grain; loose; common coarse distinct brown (10YR 5/3) iron depletions in the matrix; slightly alkaline; abrupt smooth boundary.

C5—52 to 60 inches; dark grayish brown (10YR 4/2) sand; single grain; loose; few medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; slightly alkaline.

### Range in Characteristics

*Depth to redoximorphic features:* 40 to more than 60 inches

*Thickness of the solum:* 4 to 42 inches

*Other features:* The upper part of the C horizon is loamy sand or loamy fine sand in some pedons; gravelly coarse sand is common below a depth of 50 inches; thin layers of very gravelly sand below a depth of 40 inches in some pedons.

### A or Ap horizon:

Hue—10YR

Value—2 to 4

Chroma—1 to 3

Texture—loamy sand or fine sandy loam

Reaction—slightly acid or neutral

Content of rock fragments—0 to 10 percent

### Bw horizon:

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—2 to 6

Texture—sand, loamy fine sand, or loamy sand

Reaction—slightly acid to slightly alkaline

Content of rock fragments—0 to 10 percent

### C horizon:

Hue—7.5YR or 10YR

Value—3 to 7

Chroma—2 to 6

Texture—fine sand, sand, coarse sand, gravelly coarse sand, or gravelly sand

Reaction—slightly acid to moderately alkaline

Content of rock fragments—0 to 40 percent

## Ackerman Series

*Taxonomic classification:* Sandy, mixed, mesic Histic Humaquepts

### Typical Pedon for the Series

Ackerman muck, on a slope of less than 1 percent, in a cultivated field at an elevation of 693 feet; White County, Indiana; about 3.5 miles south of Headlee; 140 feet south and 1,000 feet west of the northeast corner of sec. 28, T. 28 N., R. 2 W.; USGS Idaville, Indiana, topographic quadrangle; lat. 40 degrees 51 minutes 13.1 seconds N. and long. 86 degrees 38 minutes 31.4 seconds W., NAD 27; UTM Zone 16, 530170 Easting and 4522574 Northing, NAD 83.

Oap—0 to 8 inches; muck (sapric material), black (N 2.5/0) broken face and rubbed, very dark gray (10YR 3/1) dry; less than 5 percent fiber, a trace rubbed; moderate fine granular structure; friable; about 40 percent mineral content; neutral; abrupt irregular boundary.

Bg—8 to 14 inches; gray (5Y 5/1) coprogenous silty clay loam; moderate medium and thick platy structure; firm; many medium prominent yellowish brown (10YR 5/4) masses that have accumulated iron oxide and are in the matrix; areas of iron oxide accumulation around many root channels are strong brown (7.5YR 5/6) and many small root channels are filled with surface material;

common cracks 1 to 2 inches wide filled with surface material; neutral; abrupt smooth boundary.

Cg—14 to 26 inches; light brownish gray (10YR 6/2) fine sand; single grain; loose; few medium distinct brown (7.5YR 4/4) masses that have accumulated iron oxide and are in the matrix; neutral; clear wavy boundary.

C—26 to 80 inches; brownish yellow (10YR 6/8) fine sand; single grain; loose; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Combined thickness of the muck and coprogenous material:* 10 to 30 inches; the muck does not exceed 16 inches thick.

*Oap or Oa horizon:*

Hue—10YR or N

Value—2 or 2.5

Chroma—0 or 1

Texture—muck (sapric material)

Reaction—neutral

*Bg horizon:*

Hue—10YR to 5Y

Value—2 to 5

Chroma—1 to 3

Texture—silt loam (coprogenous material) or silty clay loam (coprogenous material)

Reaction—moderately acid to slightly alkaline

*Cg or C horizon:*

Hue—10YR to 5Y

Value—5 or 6

Chroma—1 to 8

Texture—very fine sand, fine sand, sand, or loamy sand

Reaction—neutral to strongly alkaline

## Adrian Series

*Taxonomic classification:* Sandy or sandy-skeletal, mixed, euic, mesic Terric Haplosaprists

### Typical Pedon for the Series

Adrian muck, on a slope of less than 1 percent, under marsh vegetation at an elevation of 654 feet; Gratiot County, Michigan; about 1.5 miles southeast of Ashley; 2,040 feet north and 100 feet east of the southwest corner of sec. 16, T. 9 N., R. 1 W.; USGS Ashley, Michigan, topographic quadrangle; lat. 43 degrees 10 minutes 02.4 seconds N. and long. 84 degrees 26 minutes 50.6 seconds W., NAD 27; UTM Zone 16, 707498 Easting and 4782563 Northing, NAD 83.

Oa1—0 to 16 inches; muck (sapric material), black (10YR 2/1) broken face, black (N 2.5/0) rubbed; about 12 percent fiber, less than 5 percent rubbed; moderate medium granular structure; mostly herbaceous fibers; neutral (pH 7.0 in water); abrupt wavy boundary.

Oa2—16 to 20 inches; muck (sapric material), black (10YR 2/1) broken face, very dark brown (10YR 2/2) rubbed; about 15 percent fibers, less than 5 percent rubbed; weak coarse subangular blocky structure; primarily herbaceous fibers; slightly acid (pH 6.5 in water); gradual wavy boundary.

Oa3—20 to 27 inches; muck (sapric material), black (10YR 2/1) broken face, black (10YR 2/1) rubbed; about 12 percent fibers, less than 5 percent rubbed; weak thick platy structure; mostly herbaceous fibers; moderately acid (pH 6.0 in water); gradual wavy boundary.

Oa4—27 to 34 inches; muck (sapric material), black (10YR 2/1) broken face, black (10YR 2/1) rubbed; about 12 percent fibers, less than 5 percent rubbed; massive; mostly herbaceous fibers; strongly acid (pH 5.5 in water); abrupt smooth boundary.

Cg1—34 to 60 inches; gray (10YR 5/1) sand; single grain; loose; common medium prominent light olive brown (2.5Y 5/4) masses that have accumulated iron oxide and are in the matrix; slightly alkaline; clear wavy boundary.

Cg2—60 to 80 inches; dark gray (2.5Y 4/1) fine sand; single grain; loose; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Depth to C horizon:* 16 to 51 inches

*Organic fibers:* Derived primarily from herbaceous plants but some layers contain as much as 50 percent material of woody origin

*Surface tier of Oa1 or Oap horizon:*

Hue—5YR to 10YR, or N

Value—2 or 2.5

Chroma—0 to 3

Texture—muck (sapric material)

Reaction—strongly acid to neutral

*Subsurface and bottom tiers of Oa2, Oa3, or Oa4 horizon:*

Hue—5YR to 10YR, or N

Value—2, 2.5, or 3

Chroma—0 to 3

Texture—muck (sapric material)

Reaction—strongly acid to neutral

*C or Cg horizon:*

Hue—5YR to 5Y, or N

Value—2 to 6  
 Chroma—0 to 4  
 Texture—sand, coarse sand, fine sand, or loamy sand or the gravelly or very gravelly analogs of these textures; strata of finer textures in some pedons  
 Reaction—slightly acid to moderately alkaline  
 Content of rock fragments—0 to 60 percent

### **Antung Series**

*Taxonomic classification:* Sandy, mixed, mesic Histic Humaquepts

#### **Typical Pedon for the Series**

Antung muck (fig. 18), on a slope of less than 1 percent, in a cultivated field at an elevation of 700 feet; Pulaski County, Indiana; about 1.5 miles southeast of Ripley; 2,260 feet east and 95 feet north of the southwest corner of sec. 34, T. 31 N., R. 2 W.; USGS Ripley, Indiana, topographic quadrangle; lat. 41 degrees 05.1 minutes 05.1 seconds N. and long. 86 degrees 37 minutes 58.3 seconds W., NAD 27; UTM Zone 16, 530837 Easting and 4548233 Northing, NAD 83.

Oap—0 to 9 inches; muck (sapric material), black (N 2.5/0) broken face and rubbed; a trace of fiber unrubbed and rubbed; moderate medium granular structure; friable; common very fine and fine roots; neutral; abrupt smooth boundary.

Oa—9 to 12 inches; muck (sapric material), black (N 2.5/0) broken face and rubbed; a trace of fiber unrubbed and rubbed; weak medium subangular blocky structure; friable; common very fine and fine roots; neutral; abrupt smooth boundary.

Cg1—12 to 28 inches; light brownish gray (10YR 6/2) sand; single grain; loose; many medium faint pale brown (10YR 6/3) and few medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; slightly effervescent; moderately alkaline; clear wavy boundary.

Cg2—28 to 48 inches; light brownish gray (10YR 6/2) sand; single grain; loose; few medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; slightly effervescent; moderately alkaline; clear wavy boundary.

Cg3—48 to 80 inches; grayish brown (10YR 5/2) coarse sand; single grain; loose; strongly effervescent; moderately alkaline.

#### **Range in Characteristics**

*Depth to C horizon:* 7 to 16 inches

*Organic fibers:* Derived primarily from herbaceous plants but some layers contain material of woody origin

#### *Oap or Oa horizon:*

Hue—10YR or N  
 Value—2, 2.5, or 3  
 Chroma—0 to 2 (Oap); 0 to 3 (Oa)  
 Texture—muck (sapric material)  
 Reaction—slightly acid or neutral

#### *Cg horizon:*

Hue—10YR or 2.5Y  
 Value—4 to 6  
 Chroma—1 or 2  
 Texture—sand, coarse sand, fine sand, or loamy sand or the gravelly analogs of these textures  
 Reaction—neutral to moderately alkaline  
 Content of rock fragments—0 to 25 percent

### **Auten Series**

*Taxonomic classification:* Fine-loamy over sandy or sandy-skeletal, mixed, active, mesic Aquollic Hapludalfs

#### **Typical Pedon for the Series**

Auten loam (fig. 19), on a slope of less than 1 percent, in a cultivated field at an elevation of 731 feet; St. Joseph County, Indiana; about 2.5 miles northwest of Lydick; 1,370 feet north and 90 feet east of the southwest corner of sec. 28, T. 38 N., R. 1 E.; USGS Lydick, Indiana, topographic quadrangle; lat. 41 degrees 42 minutes 43.5 seconds N. and long. 86 degrees 25 minutes 41.9 seconds W., NAD 27; UTM Zone 16, 547558 Easting and 4617973 Northing, NAD 83.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loam, brown (10YR 5/3) dry; moderate fine and medium granular structure; friable; neutral; abrupt smooth boundary.

Bt1—9 to 18 inches; brown (10YR 5/3) clay loam; weak medium subangular blocky structure; friable; few faint dark grayish brown (10YR 4/2) clay films on faces of peds; common medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron oxide and are in the matrix; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; 2 percent fine shale fragments and 3 percent gravel; neutral; gradual smooth boundary.

Bt2—18 to 22 inches; brown (10YR 5/3) sandy loam; weak medium subangular blocky structure; friable; few faint dark grayish brown (10YR 4/2) clay films on faces of peds; common medium prominent

strong brown (7.5YR 5/6) masses that have accumulated iron oxide and are in the matrix; common coarse faint grayish brown (10YR 5/2) iron depletions in the matrix; 2 percent fine shale fragments and 3 percent gravel; neutral; gradual wavy boundary.

Bg—22 to 34 inches; light brownish gray (10YR 6/2) sand; weak coarse subangular blocky structure; very friable; few medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron oxide and are in the matrix; few fine faint grayish brown (10YR 5/2) iron depletions in the matrix; 10 percent shale fragments and 2 percent gravel; moderately acid; clear wavy boundary.

BC1—34 to 40 inches; brown (10YR 5/3) loamy coarse sand; weak coarse subangular blocky structure; very friable; few fine faint grayish brown (10YR 5/2) iron depletions in the matrix; 5 percent shale fragments and 2 percent gravel; moderately acid; clear wavy boundary.

BC2—40 to 75 inches; brown (10YR 5/3) loamy sand; weak coarse subangular blocky structure; very friable; few fine faint grayish brown (10YR 5/2) iron depletions in the matrix; 5 percent shale fragments and 2 percent gravel; moderately acid; clear wavy boundary.

BC3—75 to 100 inches; yellowish brown (10YR 5/4) coarse sand; single grain; loose; few fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; 2 percent shale fragments and 2 percent gravel; slightly effervescent; slightly alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 20 to 35 inches

*Depth to carbonates:* Carbonates may occur at a depth of more than 6 feet.

*Ap horizon:*

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—loam

Reaction—strongly acid to neutral

Content of rock fragments—0 to 10 percent shale or gravel

*Bt horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—clay loam or sandy clay loam; a sandy loam layer less than 6 inches thick may be present in the lower part

Reaction—very strongly acid to neutral

Content of rock fragments—1 to 14 percent shale or gravel

*Bg or Bw horizon:*

Hue—10YR

Value—4 to 7

Chroma—1 to 4

Texture—sand, loamy sand, coarse sand, or loamy coarse sand; generally stratified

Reaction—moderately acid to slightly alkaline

Content of rock fragments—1 to 14 percent shale or gravel

*BC or BCg horizon:*

Hue—10YR

Value—4 to 7

Chroma—1 to 4

Texture—stratified sand, loamy sand, coarse sand, or loamy coarse sand or the gravelly analogs of these textures

Reaction—moderately acid to slightly alkaline

Content of rock fragments—1 to 20 percent shale or gravel

### Bainter Series

*Taxonomic classification:* Coarse-loamy, mixed, semiactive, mesic Mollic Hapludalfs

#### Typical Pedon for the Series

Bainter sandy loam (fig. 20), on a slope of 0.5 percent, in a cultivated field at an elevation of 843 feet; Elkhart County, Indiana; about 1.5 miles southeast of Benton; 2,520 feet north and 2,335 feet west of the southeast corner of sec. 17, T. 35 N., R. 7 E.; USGS Lake Wawasee, Indiana, topographic quadrangle; lat. 41 degrees 29 minutes 14 seconds N. and long. 85 degrees 44 minutes 25 seconds W., NAD 27; UTM Zone 16, 605161 Easting and 4593617 Northing, NAD 83.

Ap—0 to 9 inches; dark brown (10YR 3/3) sandy loam, brown (10YR 5/3) dry; weak fine and medium granular structure; very friable; common fine and medium roots throughout; common very fine and fine vesicular and tubular pores; 4 percent gravel; moderately acid; abrupt smooth boundary.

E—9 to 13 inches; 90 percent brown (10YR 4/3) and 10 percent brown (10YR 5/3) sandy loam; weak fine and medium subangular blocky structure; very friable; common fine and medium roots throughout; common very fine and fine vesicular and tubular pores; 4 percent gravel; moderately acid; clear wavy boundary.

2Bt1—13 to 22 inches; dark yellowish brown (10YR 4/4) sandy loam; weak medium and coarse



subangular blocky structure; friable; common very fine and fine roots between peds; common very fine to medium vesicular and tubular pores; few distinct brown (7.5YR 4/4) clay films on faces of peds; common distinct dark brown (10YR 3/3) organic coatings in root channels and pores; 13 percent gravel; slightly acid; clear wavy boundary.

2Bt2—22 to 31 inches; brown (7.5YR 4/4) coarse sandy loam; weak and moderate fine and medium subangular blocky structure; friable; common very fine and fine roots between peds; common very fine to medium vesicular and tubular pores; common distinct brown (7.5YR 4/3) clay films on faces of peds and in pores; 11 percent gravel; neutral; clear wavy boundary.

2Bt3—31 to 39 inches; brown (7.5YR 4/4) gravelly coarse sandy loam; weak and moderate fine and medium subangular blocky structure; friable; common very fine and fine roots between peds; common very fine to medium vesicular and tubular pores; common distinct brown (7.5YR 4/3) clay films on faces of peds; 29 percent gravel; neutral; clear wavy boundary.

2Bt4—39 to 44 inches; brown (7.5YR 4/4) sandy loam; weak fine and medium subangular blocky structure; friable; common very fine and fine roots between peds; common very fine to medium vesicular and tubular pores; common distinct brown (7.5YR 4/3) and dark brown (7.5YR 3/3) clay films on faces of peds and in pores; 12 percent gravel; neutral; clear smooth boundary.

2Bt5—44 to 54 inches; brown (7.5YR 4/4) sandy clay loam; moderate fine and medium subangular blocky structure; friable; common very fine and fine roots between peds; common very fine to medium vesicular and tubular pores; common distinct dark brown (7.5YR 3/3) clay films on faces of peds; 14 percent gravel; neutral; clear wavy boundary.

3C—54 to 80 inches; light yellowish brown (10YR 6/4), pale brown (10YR 6/3), and dark grayish brown (10YR 4/2) coarse sand; single grain; loose; 13 percent gravel; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 40 to 70 inches

*Content of clay in the particle-size control section:* 10 to 18 percent

*Ap, A, or AB horizon:*

Hue—7.5YR or 10YR

Value—2, 2.5, or 3

Chroma—1 to 3

Texture—sandy loam

Reaction—moderately acid to neutral

Content of rock fragments—0 to 6 percent gravel

*E, EB, BE, or BA horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—2 to 4

Texture—sandy loam

Reaction—strongly acid to neutral

Content of rock fragments—0 to 6 percent gravel

*2Bt horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—sandy loam, coarse sandy loam, or sandy clay loam; the gravelly analogs of these textures may be present in the lower part

Reaction—strongly acid to slightly alkaline

Content of rock fragments—3 to 14 percent gravel in the upper part and 6 to 34 percent gravel in the lower part; 0 to 5 percent cobbles

*2BC horizon (where present):*

Texture—loamy sand or loamy coarse sand

*3C horizon:*

Hue—7.5YR or 10YR

Value—4 to 7

Chroma—3 or 4

Texture—coarse sand, loamy sand, or coarse sand or the gravelly or very gravelly analogs of these textures

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—10 to 50 percent gravel; 0 to 5 percent cobbles

## Baugo Series

*Taxonomic classification:* Fine-loamy, mixed, active, mesic Aeric Epiaqualfs

### Typical Pedon for the Series

Baugo silt loam, on a slope of less than 1 percent, in a cultivated field at an elevation of 824 feet; Elkhart County, Indiana; about 2 miles south and 2 miles west of Jamestown; 1,930 feet north and 200 feet east of the southwest corner of sec. 3, T. 36 N., R. 4 E.; USGS Wakarusa, Indiana, topographic quadrangle; lat. 41 degrees 35 minutes 59 seconds N. and long. 86 degrees 03 minutes 34 seconds W., NAD 27; UTM Zone 16, 578381 Easting and 4605768 Northing, NAD 83.

Ap1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak

fine granular structure; friable; common very fine and fine roots throughout; common very fine to medium interstitial and tubular pores with low or moderate continuity; neutral; clear smooth boundary.

Ap2—5 to 11 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine subangular blocky structure; friable; common very fine and fine roots throughout; common very fine to medium interstitial and tubular pores with low or moderate continuity; neutral; abrupt smooth boundary.

Bt—11 to 14 inches; yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots throughout; common very fine to medium interstitial and tubular pores with low or moderate continuity; many distinct gray (10YR 5/1) clay films on faces of peds; many medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear wavy boundary.

Btg1—14 to 22 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium subangular blocky structure; firm; common fine roots throughout; common very fine to medium interstitial and tubular pores with low or moderate continuity; common distinct gray (10YR 5/1) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; common medium distinct black (N 2.5/0) rounded weakly cemented iron and manganese oxide concretions; neutral; clear wavy boundary.

Btg2—22 to 29 inches; grayish brown (10YR 5/2) silty clay loam; moderate medium subangular blocky structure; firm; common fine roots throughout; common very fine to medium interstitial and tubular pores with low or moderate continuity; common distinct gray (10YR 5/1) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; few medium distinct black (N 2.5/0) rounded masses in which iron and manganese oxide have accumulated; neutral; clear wavy boundary.

BC—29 to 36 inches; yellowish brown (10YR 5/6) silt loam; weak coarse subangular blocky structure; firm; common fine roots throughout; common very fine to medium interstitial and tubular pores with low or moderate continuity; few medium prominent black (N 2.5/0) rounded masses in which iron and manganese oxide have accumulated; many medium prominent grayish brown (10YR 5/2) iron depletions in the matrix; neutral; abrupt wavy boundary.

2CBg—36 to 42 inches; grayish brown (10YR 5/2) sand; weak coarse subangular blocky structure; very friable; many medium distinct yellowish brown (10YR 5/4) masses that have accumulated iron oxide and are in the matrix; neutral; clear wavy boundary.

2CB—42 to 51 inches; yellowish brown (10YR 5/4) loamy sand; weak coarse subangular blocky structure; very friable; many medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear wavy boundary.

2C—51 to 56 inches; brown (10YR 5/3) stratified sand and gravelly sand; single grain; loose; common medium distinct gray (10YR 5/1) iron depletions in the matrix; 20 percent gravel and 5 percent cobbles in the lower 2 inches; neutral; abrupt wavy boundary.

3Cd—56 to 80 inches; reddish brown (5YR 5/4) loam; massive; very firm; 3 percent gravel; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 25 to 50 inches

*Thickness of the solum:* 40 to 60 inches

*Depth to dense till:* 50 to 70 inches

*Thickness of the loamy outwash:* 30 to 40 inches

#### *Ap horizon:*

Hue—10YR

Value—4

Chroma—2 or 3

Texture—silt loam

Reaction—moderately acid to neutral

Content of rock fragments—0 to 3 percent gravel

#### *E, EB, or BE horizon (where present):*

Hue—10YR

Value—4 or 5

Chroma—2 or 3

Texture—silt loam

Reaction—moderately acid to neutral

Content of rock fragments—0 to 3 percent gravel

#### *Bt or Btg horizon:*

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—1 to 6

Texture—clay loam or silty clay loam

Reaction—moderately acid to neutral

Content of rock fragments—0 to 5 percent gravel

#### *BC or BCg horizon:*

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—1 to 6

Texture—loam, silt loam, sandy loam, or fine sandy loam  
 Reaction—moderately acid to neutral  
 Content of rock fragments—0 to 5 percent gravel

**2CB, 2C, or Cg horizon:**

Hue—10YR or 2.5Y  
 Value—4 to 6  
 Chroma—1 to 6  
 Texture—loamy sand, sand, or gravelly sand; thin strata or subhorizons of sandy loam, fine sandy loam, or very fine sandy loam in some pedons  
 Reaction—slightly acid to moderately alkaline  
 Content of rock fragments—0 to 20 percent gravel; 0 to 5 percent cobbles

**Cd horizon:**

Hue—5YR, 10YR, or 2.5Y  
 Value—4 to 6  
 Chroma—1 to 6  
 Texture—loam or fine sandy loam  
 Reaction—slightly alkaline or moderately alkaline  
 Content of rock fragments—0 to 10 percent gravel; 0 to 1 percent cobbles or stones

## **Blount Series**

*Taxonomic classification:* Fine, illitic, mesic Aeric Epiaqualfs

### **Typical Pedon for the Series**

Blount silt loam, on a northwest-facing, concave slope of 1 percent, in a cultivated field at an elevation of 867 feet; Mercer County, Ohio; approximately 1.25 miles east of Wabash; in Washington Township; 130 feet west and 1,880 feet south of the northeast corner of sec. 3, T. 6 S., R. 1 E.; USGS Erastus, Ohio, topographic quadrangle; lat. 40 degrees 33 minutes 35 seconds N. and long. 84 degrees 46 minutes 45 seconds W., NAD 27; UTM Zone 16, 688022 Easting and 4492260 Northing, NAD 83.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine and medium granular structure; friable; common roots; 3 percent gravel; slightly acid; abrupt smooth boundary.

Btg—7 to 12 inches; grayish brown (10YR 5/2) silty clay; moderate medium subangular blocky structure; firm; common roots; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; many distinct yellowish brown (10YR 5/4) masses that have accumulated iron oxide, have clear boundaries, and are in the matrix; common distinct light gray (10YR 7/1) clay depletions on

vertical faces of peds; 3 percent gravel; strongly acid; clear wavy boundary.

Bt—12 to 23 inches; dark yellowish brown (10YR 4/4) clay; weak fine and medium prismatic structure parting to moderate medium subangular blocky; firm; few roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide, have diffuse boundaries, and are in the matrix; many medium distinct dark grayish brown (10YR 4/2) and common distinct gray (10YR 5/1) iron depletions with clear boundaries in the matrix; 4 percent gravel; slightly acid; clear wavy boundary.

BCg—23 to 30 inches; grayish brown (10YR 5/2) silty clay loam; weak medium subangular blocky structure; firm; few faint dark grayish brown (10YR 4/2) clay films on vertical faces of peds; few distinct light gray (10YR 7/2) calcium carbonate coatings on vertical faces of peds; many medium distinct dark yellowish brown (10YR 4/4) and common prominent yellowish brown (10YR 5/6) masses that have accumulated iron oxide, have clear boundaries, and are in the matrix; 8 percent gravel; slightly effervescent; slightly alkaline; clear wavy boundary.

CBd—30 to 42 inches; brown (10YR 4/3) clay loam; weak medium platy structure; very firm; common distinct white (10YR 8/1) calcium carbonate coatings on faces of plates; common faint grayish brown (10YR 5/2) iron depletions with diffuse boundaries in the matrix; 10 percent gravel; strongly effervescent; moderately alkaline; gradual wavy boundary.

Cd1—42 to 54 inches; brown (10YR 5/3) clay loam; massive, with widely spaced vertical fractures; very firm; common distinct light gray (10YR 7/1) calcium carbonate coatings on faces of fractures; few distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and have clear boundaries; few distinct dark gray (10YR 4/1) iron depletions with diffuse boundaries in the matrix; 10 percent gravel; strongly effervescent; moderately alkaline; gradual wavy boundary.

Cd2—54 to 80 inches; brown (10YR 4/3) clay loam; massive; very firm; few prominent strong brown (7.5YR 5/6) masses that have accumulated iron oxide and have clear boundaries; 10 percent gravel; strongly effervescent; moderately alkaline.

### **Range in Characteristics**

*Depth to the base of the argillic horizon:* 20 to 45 inches

*Thickness of the solum:* 30 to 60 inches

*Depth to dense till:* 30 to 60 inches

*Depth to carbonates:* 19 to 40 inches

*Content of clay in the particle-size control section:* 35 to 45 percent

*Kind of rock fragments:* Predominantly igneous, limestone, or dolostone gravel

*Ap horizon:*

Hue—10YR

Value—3 or 4, 6 or more dry

Chroma—1 to 3

Texture—silt loam or loam

Reaction—strongly acid to neutral

Content of rock fragments—0 to 5 percent

*A horizon (where present):*

Hue—10YR

Value—2 or 3, 4 or 5 dry

Chroma—1 or 2

Texture—silt loam or loam

Reaction—strongly acid to neutral

Content of rock fragments—0 to 5 percent

Thickness of the horizon—less than 5 inches

*E horizon (where present):*

Hue—10YR or 2.5Y

Value—4 or 5

Chroma—1 to 3

Thickness of the horizon—3 to 6 inches

*BE or EB horizon (where present):*

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 4

Texture—silty clay loam; less commonly silt loam

Reaction—strongly acid to neutral

Content of rock fragments—0 to 10 percent

Thickness of the horizon—3 to 6 inches

*Bt or Btg horizon:*

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 4

Texture—silty clay loam, clay loam, clay, or silty clay

Reaction—very strongly acid to slightly acid in the upper part; moderately acid to slightly alkaline in the lower part

Content of rock fragments—2 to 10 percent

*BCg or BC horizon:*

Hue—10YR to 5Y

Value—4 to 6

Chroma—1 to 6

Texture—silty clay loam, clay loam, or silty clay

Reaction—slightly acid to moderately alkaline

Content of rock fragments—2 to 14 percent

*CBd, CBdg, Cdg, or Cd horizon:*

Hue—10YR to 5Y

Value—4 to 6

Chroma—1 to 4

Texture—silty clay loam or clay loam

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—2 to 14 percent; typically above 5 percent

## **Brady Series**

*Taxonomic classification:* Coarse-loamy, mixed, active, mesic Aquollic Hapludalfs

### **Typical Pedon for the Series**

Brady sandy loam, on a slope of 1 percent, in a cultivated field at an elevation of 891 feet; Eaton County, Michigan; about 3 miles southwest of Charlotte; 500 feet north and 800 feet east of the center of sec. 33, T. 2 N., R. 5 W.; USGS Chester, Michigan, topographic quadrangle; lat. 42 degrees 31 minutes 08.0 seconds N. and long. 84 degrees 54 minutes 08.4 seconds W., NAD 27; UTM Zone 16, 672308 Easting and 4709525 Northing, NAD 83.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) sandy loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; slightly acid; abrupt smooth boundary.

E—9 to 13 inches; grayish brown (10YR 5/2) sandy loam; weak coarse granular structure; friable; few fine prominent yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; slightly acid; clear wavy boundary.

BE—13 to 23 inches; brown (10YR 5/3) sandy loam; weak coarse subangular blocky structure; friable; many medium distinct gray (10YR 5/1) iron depletions in the matrix; moderately acid; clear wavy boundary.

Bt—23 to 37 inches; dark yellowish brown (10YR 4/4) sandy loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds and bridges between sand grains; very dark grayish brown (10YR 3/2) sandy loam wormcasts and fillings in root channels; prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; many medium distinct gray (10YR 5/1) iron depletions in the matrix; about 6 percent gravel; moderately acid; abrupt irregular boundary.

BC—37 to 56 inches; brown (7.5YR 4/4) loamy sand; weak coarse subangular blocky structure; very friable; few discontinuous brown (7.5YR 4/4) sandy loam layers 1/8 inch to 2 inches thick; prominent



yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; few medium prominent gray (10YR 5/1) iron depletions in the matrix; neutral; abrupt irregular boundary.

2C—56 to 80 inches; brown (10YR 5/3) gravelly coarse sand and coarse sand; single grain; loose; common medium distinct gray (10YR 5/1) iron depletions in the matrix; about 15 percent gravel; slightly effervescent; slightly alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 34 to 56 inches

*Depth to carbonates:* 40 to 70 inches

#### *Ap horizon:*

Hue—7.5YR or 10YR

Value—2, 2.5, or 3

Chroma—1 to 3

Texture—sandy loam or fine sandy loam

Reaction—strongly acid to neutral

Content of rock fragments—0 to 14 percent

#### *E or BE horizon:*

Hue—10YR

Value—5 or 6

Chroma—2 to 4

Texture—sandy loam, fine sandy loam, loamy fine sand, or loamy sand; less commonly loam or silt loam

Reaction—strongly acid to neutral

Content of rock fragments—0 to 14 percent

#### *Bt horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—sandy loam or gravelly sandy loam; less commonly sandy clay loam, gravelly sandy clay loam, or clay loam; sandy clay loam or clay loam in pedons less than 8 inches thick

Reaction—strongly acid to neutral

Content of rock fragments—0 to 25 percent

#### *BC horizon:*

Hue—7.5YR or 10YR

Value—4 to 7

Chroma—2 to 6

Texture—sandy loam or loamy sand or the gravelly analogs of these textures

Reaction—strongly acid to neutral

Content of rock fragments—0 to 25 percent

#### *2C horizon:*

Hue—10YR

Value—4 to 6

Chroma—1 to 4

Texture—gravelly coarse sand, coarse sand, sand, gravelly sand, very gravelly sand, or stratified coarse sand and gravel

Reaction—neutral to moderately alkaline

Content of rock fragments—10 to 55 percent

## **Brems Series**

*Taxonomic classification:* Mixed, mesic Aquic Udipsamments

### Typical Pedon for the Series

Brems loamy sand, in a nearly level area in a cultivated field at an elevation of 777 feet; Elkhart County, Indiana; 2 miles north of Elkhart; 1,920 feet west and 830 feet north of the southeast corner of sec. 10, T. 38 N., R. 5 E.; USGS Elkhart, Indiana, topographic quadrangle; lat. 41 degrees 45 minutes 20 seconds N. and long. 85 degrees 56 minutes 06 seconds W., NAD 27; UTM Zone 16, 588538 Easting and 4623190 Northing, NAD 83.

Ap—0 to 9 inches; dark brown (10YR 3/3) loamy sand, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; common very fine and fine roots throughout; slightly acid; abrupt smooth boundary.

Bw1—9 to 18 inches; brown (7.5YR 4/4) loamy sand; weak fine subangular blocky structure; very friable; few very fine and fine roots throughout; few fine tubular pores; moderately acid; gradual wavy boundary.

Bw2—18 to 27 inches; strong brown (7.5YR 4/6) loamy sand; weak fine subangular blocky structure; very friable; few very fine and fine roots throughout; few fine tubular pores; strongly acid; clear wavy boundary.

Bw3—27 to 33 inches; strong brown (7.5YR 4/6) sand; weak medium subangular blocky structure; very friable; few medium distinct brown (7.5YR 4/4) masses that have accumulated iron oxide and are in the matrix; few medium distinct dark brown (7.5YR 3/4) weakly cemented masses in which iron and manganese oxide have accumulated throughout; common fine prominent brown (10YR 5/3) iron depletions in the matrix; very strongly acid; clear wavy boundary.

Bw4—33 to 46 inches; yellowish brown (10YR 5/6) sand; single grain; loose; common coarse distinct brown (7.5YR 4/4) masses that have accumulated iron oxide and are in the matrix; few medium distinct dark brown (7.5YR 3/4) weakly cemented masses in which iron and manganese oxide have accumulated throughout; common fine prominent

light brownish gray (10YR 6/2) and distinct pale brown (10YR 6/3) iron depletions in the matrix; very strongly acid; clear wavy boundary.

Bw5—46 to 56 inches; yellowish brown (10YR 5/4 and 5/6) sand; single grain; loose; common coarse faint brown (7.5YR 4/4) masses that have accumulated iron oxide and are in the matrix; few medium distinct dark brown (7.5YR 3/4) weakly cemented masses in which iron and manganese oxide have accumulated throughout; common medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; strongly acid; clear wavy boundary.

Bw6—56 to 66 inches; yellowish brown (10YR 5/4 and 5/6) sand; single grain; loose; many medium distinct strong brown (7.5YR 4/6) masses that have accumulated iron oxide and are in the matrix; few medium distinct dark brown (7.5YR 3/4) weakly cemented masses in which iron and manganese oxide have accumulated throughout; many medium distinct light gray (10YR 7/2) iron depletions in the matrix; strongly acid; clear wavy boundary.

Bw7—66 to 72 inches; yellowish brown (10YR 5/4) sand; single grain; loose; common fine distinct strong brown (7.5YR 4/6) masses that have accumulated iron oxide and are in the matrix; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; strongly acid; clear wavy boundary.

BC—72 to 80 inches; yellowish brown (10YR 5/4) sand; single grain; loose; common fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; strongly acid.

### Range in Characteristics

*Thickness of the solum:* 40 to more than 80 inches

*Depth to redoximorphic features:* Below a depth of 24 inches

*Content of rock fragments:* 0 to 10 percent throughout the series control section

*Content of medium and coarser sand in the particle-size control section:* More than 25 percent

*Ap or A horizon:*

Hue—10YR

Value—3 to 5

Chroma—2 to 4

Texture—loamy sand or loamy fine sand

Reaction—strongly acid to neutral depending upon liming history

*E horizon (where present):*

Hue—10YR

Value—5 or 6

Chroma—3 or 4

Texture—loamy sand, loamy fine sand, sand, or fine sand

Reaction—strongly acid to neutral depending upon liming history

*Bw horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 8

Texture—loamy sand, loamy fine sand, sand, or fine sand

Reaction—very strongly acid to moderately acid

*BC or C horizon (where present):*

Hue—10YR or 2.5Y

Value—5 to 7

Chroma—2 to 6

Texture—loamy sand, sand, loamy fine sand, or fine sand

Reaction—strongly acid to slightly acid

## Brookston Series

*Taxonomic classification:* Fine-loamy, mixed, superactive, mesic Typic Argiaquolls

### Typical Pedon for the Series

Brookston loam, on a concave slope of 1 percent, in a cultivated field at an elevation of 865 feet; Elkhart County, Indiana; about 2 miles north and 0.5 mile east of Nappanee; 1,257 feet north and 2,238 feet east of the southwest corner of sec. 18, T. 35 N., R. 5 E.; USGS Nappanee East, Indiana, topographic quadrangle; lat. 41 degrees 28 minutes 57 seconds N. and long. 85 degrees 59 minutes 44 seconds W., NAD 27; UTM Zone 16, 583856 Easting and 4592814 Northing, NAD 83.

Ap1—0 to 5 inches; very dark grayish brown (10YR 3/2) loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; common very fine and fine roots throughout; common very fine and fine interstitial and tubular pores with low continuity; 1 percent gravel; neutral; abrupt smooth boundary.

Ap2—5 to 9 inches; very dark grayish brown (10YR 3/2) loam, dark grayish brown (10YR 4/2) dry; weak coarse granular structure; firm; common very fine and fine roots throughout; common very fine and fine interstitial and tubular pores with low continuity; 1 percent gravel; slightly acid; abrupt smooth boundary.

Btg1—9 to 16 inches; very dark gray (10YR 3/1) clay loam, dark gray (10YR 4/1) dry; moderate medium

subangular blocky structure; friable; common very fine and fine roots throughout; common very fine and fine interstitial and tubular pores with moderate continuity; common faint very dark gray (10YR 3/1) clay films on faces of peds; 1 percent gravel; neutral; clear wavy boundary.

Btg2—16 to 25 inches; dark gray (10YR 4/1) clay loam; moderate medium subangular blocky structure; firm; common very fine and fine roots throughout; common very fine and fine interstitial and tubular pores with moderate continuity; many faint dark gray (10YR 4/1) clay films on faces of peds; common fine and medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron oxide and are in the matrix; 1 percent gravel; neutral; clear wavy boundary.

Btg3—25 to 38 inches; grayish brown (10YR 5/2) clay loam; weak medium prismatic structure; firm; common very fine and fine roots between peds; common very fine and fine interstitial and tubular pores with moderate continuity; many distinct dark gray (10YR 4/1) clay films on faces of peds; many fine and medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron oxide and are in the matrix; about 30 percent sand; 2 percent gravel; neutral; gradual wavy boundary.

Bt—38 to 48 inches; brown (10YR 5/3) loam; moderate very coarse prismatic structure parting to weak medium subangular blocky; firm; many distinct gray (10YR 5/1) clay films on faces of peds; many fine and medium faint dark yellowish brown (10YR 4/4) masses that have accumulated iron oxide and are in the matrix; about 47 percent sand; 2 percent gravel; slightly alkaline; gradual wavy boundary.

BC1—48 to 58 inches; dark yellowish brown (10YR 4/4) loam; moderate very coarse prismatic structure parting to weak medium subangular blocky; firm; many distinct gray (10YR 5/1) clay films on vertical faces of peds; many fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; 1 percent gravel; slightly alkaline; gradual wavy boundary.

BC2—58 to 68 inches; dark yellowish brown (10YR 4/4) loam; moderate very coarse prismatic structure parting to weak medium subangular blocky; firm; many distinct gray (10YR 5/1) clay films on vertical faces of peds; many fine and medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; strongly effervescent on prism faces; slightly effervescent within prisms; 1 percent gravel; moderately alkaline; gradual wavy boundary.

C—68 to 80 inches; yellowish brown (10YR 5/4) loam;

massive; firm; few distinct gray (10YR 6/1) carbonate coatings in cracks; 1 percent gravel; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 30 to 70 inches

*Depth to carbonates:* 40 to 70 inches

*Thickness of the mollic epipedon:* 10 to 20 inches

*Thickness of the silty material:* 0 to 20 inches

*Particle-size control section:* 25 to 35 percent clay; 15 to 40 percent fine sand or coarser; less than 60 percent medium sand or coarser in the sand fraction

*Ap or A horizon:*

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—loam

Reaction—slightly acid or neutral

Content of rock fragments—0 to 5 percent

*BA or AB horizon (where present):*

Texture—silt loam

*Btg or Bt horizon:*

Hue—10YR to 5Y, or N

Value—4 to 6; 3 in the horizon immediately below the A horizon in some pedons

Chroma—0 to 6

Texture—silty clay loam, clay loam, or loam

Reaction—slightly acid to slightly alkaline

Content of rock fragments—0 to 11 percent

*BC or BCg horizon:*

Hue—10YR to 5Y, or N

Value—4 to 7

Chroma—0 to 4

Texture—loam or fine sandy loam

Reaction—slightly acid in the upper part; moderately alkaline in the lower part

Content of rock fragments—0 to 11 percent

*C or Cg horizon:*

Hue—10YR to 5Y, or N

Value—4 to 7

Chroma—0 to 4

Texture—loam or fine sandy loam

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—0 to 11 percent

### Cohoctah Series

*Taxonomic classification:* Coarse-loamy, mixed, active, mesic Fluvaquentic Endoaquolls

### Typical Pedon for the Series

Cohoctah loam, on a slope of less than 1 percent, in a wooded area at an elevation of 620 feet; Ottawa County, Michigan; about 4.5 miles east of Pearline; 2,440 feet east and 320 feet north of the southwest corner of sec. 22, T. 7 N., R. 13 W.; USGS Grandville, Michigan, topographic quadrangle; lat. 42 degrees 58 minutes 25.8 seconds N. and long. 85 degrees 50 minutes 07.35 seconds W., NAD 27; UTM Zone 16, 594963 Easting and 4758570 Northing, NAD 83.

A—0 to 13 inches; very dark gray (10YR 3/1) loam, gray (10YR 5/1) dry; weak medium granular structure; friable; slightly alkaline; clear smooth boundary.

Bg1—13 to 21 inches; dark gray (10YR 4/1) sandy loam; weak coarse subangular blocky structure; friable; many medium distinct very dark brown (10YR 2/2) organic stains on vertical faces of peds; slightly alkaline; clear smooth boundary.

Bg2—21 to 33 inches; grayish brown (10YR 5/2) fine sandy loam; weak coarse subangular blocky structure; friable; many fine prominent yellowish red (5YR 5/6) masses in which iron oxide has accumulated throughout; strongly effervescent; moderately alkaline; abrupt smooth boundary.

Bg3—33 to 40 inches; very dark grayish brown (10YR 3/2) loam; weak coarse subangular blocky structure; friable; few fine faint gray (10YR 5/1) iron depletions throughout; strongly effervescent; moderately alkaline; abrupt wavy boundary.

Bg4—40 to 56 inches; grayish brown (10YR 5/2) sandy loam; weak coarse subangular blocky structure; friable; common medium prominent yellowish brown (10YR 5/8) masses in which iron oxide has accumulated throughout; strongly effervescent; moderately alkaline; clear smooth boundary.

2Cg1—56 to 72 inches; gray (10YR 5/1) sand; single grain; loose; strongly effervescent; moderately alkaline; clear wavy boundary.

2Cg2—72 to 80 inches; dark gray (10YR 4/1) coarse sand; single grain; loose; 10 percent gravel; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Thickness of the mollic epipedon:* 10 to 24 inches

*Particle-size control section:* The percent of silt plus twice the percent of clay averages more than 30 percent.

*A horizon:*

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—loam

Reaction—slightly acid to slightly alkaline

*Bg or Ab horizon (where present):*

Hue—10YR to 5Y, or N

Value—2 to 6

Chroma—0 to 4

Texture—sandy loam, fine sandy loam, loamy fine sand, or loam or the mucky analogs of these textures; thin layers or lenses of sand, fine sand, loamy sand, loamy fine sand, or silt loam in some pedons

Reaction—slightly acid to moderately alkaline

Content of rock fragments—0 to 10 percent

*Cg or Ab horizon (where present):*

Hue—10YR to 5Y, or N

Value—2 to 6

Chroma—0 to 2

Texture—fine sand, loamy sand, loamy fine sand, sand, or coarse sand; thin strata of sandy loam, fine sandy loam, loam, or silt loam

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—0 to 10 percent

### Coloma Series

*Taxonomic classification:* Mixed, mesic Lamellic Udipsamments

### Typical Pedon for MLRA 98

Coloma sand, 2 to 5 percent slopes, in a tree nursery field at an elevation of 804 feet; Elkhart County, Indiana; approximately 1.25 miles south and 0.25 mile west of Vistula; 900 feet east and 1,050 feet north of the southwest corner of sec. 21, T. 38 N., R. 7 E.; USGS Middlebury, Indiana, topographic quadrangle; lat. 41 degrees 43 minutes 43 seconds N. and long. 85 degrees 44 minutes 02 seconds W., NAD 27; UTM Zone 16, 605301 Easting and 4620425 Northing, NAD 83.

Ap—0 to 12 inches; brown (10YR 4/3) sand, brown (10YR 5/3) dry; weak fine granular structure; very friable; many fine and medium roots throughout; 1 percent gravel; neutral; abrupt smooth boundary.

Bw1—12 to 27 inches; yellowish brown (10YR 5/6) sand; weak fine granular structure; very friable; common fine to coarse roots throughout; 1 percent gravel; neutral; gradual wavy boundary.

Bw2—27 to 37 inches; brownish yellow (10YR 6/6) sand; single grain; loose; common fine and medium roots throughout; 1 percent gravel; neutral; clear wavy boundary.

Bw3—37 to 47 inches; brownish yellow (10YR 6/6) sand; single grain; loose; common fine and



medium roots throughout; neutral; clear wavy boundary.

E and Bt—47 to 80 inches; light yellowish brown (10YR 6/4) sand (E); single grain; loose; several wavy and discontinuous brown (7.5YR 4/4) loamy sand lamellae (Bt)  $\frac{1}{8}$  to  $\frac{1}{2}$  inch thick and having a combined thickness of approximately  $3\frac{1}{2}$  inches; weak medium subangular blocky structure; very friable; common fine roots throughout; slightly acid.

### Range in Characteristics

*Depth to the first lamellae:* 20 to 60 inches

*Combined thickness of the lamellae:* Less than 6 inches to a depth of 80 inches

*Particle-size control section:* Less than 50 percent fine sand; 25 percent or more medium, coarse, and very coarse sand

*Content of rock fragments:* 0 to 14 percent gravel and 0 to 5 percent cobbles throughout

*Ap horizon:*

Hue—7.5YR or 10YR

Value—3 or 4

Chroma—2 or 3

Texture—sand

Reaction—very strongly acid to neutral

*A horizon (where present):*

Hue—7.5YR or 10YR

Value—2 to 4

Chroma—1 to 3

Texture—sand

Reaction—very strongly acid to neutral

*Bw horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—4 to 6

Texture—Dominantly sand or loamy sand; subhorizons of fine sand or loamy fine sand in some pedons

Reaction—very strongly acid to neutral

*E part of the E and Bt horizon:*

Hue—5YR to 10YR

Value—4 to 7

Chroma—3 to 6

Texture—loamy sand; less commonly sandy loam or sand

Reaction—very strongly acid to moderately acid in the upper part; strongly acid to neutral in the lower part

*Bt part of the E and Bt horizon:*

Hue—5YR to 10YR

Value—3 to 5

Chroma—3 to 6

Texture—loamy sand; less commonly sandy loam or sand

Reaction—very strongly acid to moderately acid in the upper part; strongly acid to neutral in the lower part

*C horizon (where present):*

Hue—5YR to 10YR

Value—4 to 7

Chroma—3 to 6

Texture—sand

Reaction—strongly acid to neutral

### Coupee Series

*Taxonomic classification:* Fine-loamy over sandy or sandy-skeletal, mixed, active, mesic Ultic Hapludalfs

### Typical Pedon for the Series

Coupee silt loam, on a convex 1 percent slope, in a cultivated field at an elevation of 745 feet; St. Joseph County, Indiana; about 3 miles east and 0.5 mile north of New Carlisle; 1,620 feet west and 1,440 feet south of northeast corner of sec. 30, T. 38 N., R. 1 E.; USGS Lydick, Indiana, topographic quadrangle; lat. 41 degrees 43 minutes 08.02 seconds N. and long. 86 degrees 27 minutes 14.21 seconds W., NAD 27; UTM Zone 16, 545410 Easting and 4618712 Northing, NAD 83.

Ap—0 to 10 inches; black (10YR 2/1) silt loam, very dark brown (10YR 2/2) crushed, very dark grayish brown (10YR 3/2) dry; moderate fine granular structure; friable; neutral; abrupt smooth boundary.

A—10 to 14 inches; black (10YR 2/1) silt loam, very dark brown (10YR 2/2) crushed, very dark grayish brown (10YR 3/2) dry; moderate medium granular structure; friable; moderately acid; clear wavy boundary.

E—14 to 21 inches; brown (10YR 5/3) silt loam; moderate medium and fine subangular blocky structure; friable; many very fine pores with moderate continuity; common distinct very dark brown (10YR 2/2) organic coatings in pores and old root channels; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; strongly acid; clear wavy boundary.

Bt1—21 to 26 inches; brown (10YR 4/3) clay loam; moderate medium subangular blocky structure; firm; common very fine pores with moderate continuity; common faint dark brown (10YR 3/3) clay films on faces of peds; common distinct very dark grayish brown (10YR 3/2) organic coatings in pores and old root channels; few fine and medium

gravel  $\frac{1}{2}$  inch or less in diameter; moderately acid; clear wavy boundary.

Bt2—26 to 33 inches, dark yellowish brown (10YR 4/4) clay loam; moderate coarse and medium subangular blocky structure; firm; few fine pores with moderate continuity; common faint brown (10YR 4/3) clay films on faces of peds; common distinct dark brown (10YR 3/3) organic coatings in pores; few medium gravel about  $\frac{1}{2}$  inch in diameter; moderately acid; clear wavy boundary.

2Bt3—33 to 52 inches; brown (7.5YR 4/4) stratified loamy sand, sand, and coarse sand; weak coarse subangular blocky structure and single grain; very friable and loose; few distinct very dark grayish brown (10YR 3/2) clay films on gravel and bridges between sand grains in the upper part; 15 percent gravel and shale fragments; strongly acid; clear wavy boundary.

2C—52 to 98 inches; stratified pale brown (10YR 6/3) fine sand, sand, and very channery sand (50 percent hard fine shale fragments); below 72 inches material is banded light brownish gray (10YR 6/2) sand and brown (7.5YR 4/4) loamy sand containing about 8 percent shale fragments; single grain; loose; strongly acid.

### Range in Characteristics

*Thickness of the solum:* 40 to 60 inches

*Depth to contrasting material:* 30 to 40 inches

*Content of rock fragments:* Less than 5 percent gravel and shale in some horizons; as much as 25 percent in others

*Series control section:* Sand fraction throughout the solum is dominantly medium and coarser

*Content of clay in the particle-size control section:* 18 to 30 percent

*Other features:* Some pedons have an EB or an A and B horizon. Some pedons have a 2BC horizon.

*Ap or A horizon:*

Hue—10YR

Value—2 or 3

Chroma—1 to 3

Texture—silt loam

Reaction—strongly acid to neutral

*E horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—3 or 4

Texture—silt loam or loam; less commonly sandy loam

Reaction—strongly acid to neutral

*Bt horizon:*

Hue—7.5YR or 10YR

Value—2 to 5

Chroma—3 or 4

Texture—loam, sandy clay loam, or clay loam

Reaction—very strongly acid to moderately acid

*2Bt horizon:*

Hue—7.5YR or 10YR

Value—2 to 5

Chroma—3 or 4

Texture—loamy sand or sand

Reaction—very strongly acid to moderately acid

*2C horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—stratified sand, channery sand, loamy sand, or channery loamy sand

Reaction—very strongly acid to moderately acid

## Crosier Series

*Taxonomic classification:* Fine-loamy, mixed, active, mesic Aeric Epiaqualfs

### Typical Pedon for the Series

Crosier loam, on a slope of 1 percent, in a cultivated field at an elevation of 852 feet; St. Joseph County, Indiana; about 1.5 miles north and 1.25 miles east of Woodland; 280 feet south and 560 feet east of the northwest corner of sec. 11, T. 36 N., R. 3 E.; USGS Wyatt, Indiana, topographic quadrangle; lat. 41 degrees 35 minutes 34.38 seconds N. and long. 86 degrees 09 minutes 21.28 seconds W., NAD 27; UTM Zone 16, 570349 Easting and 4604926 Northing, NAD 83.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; 1 percent gravel; neutral; abrupt smooth boundary.

Eg—8 to 11 inches; grayish brown (10YR 5/2) loam; weak medium subangular blocky structure; friable; common medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; common distinct light gray (10YR 7/1) clay depletions on faces of peds; 1 percent gravel; slightly acid; clear smooth boundary.

Btg—11 to 20 inches; grayish brown (10YR 5/2) clay loam; moderate medium subangular blocky structure; firm; many distinct dark gray (10YR 4/1) clay films on faces of peds; many coarse prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; 5 percent gravel; slightly acid; gradual wavy boundary.

**Bt**—20 to 30 inches; brown (10YR 5/3) clay loam; moderate coarse subangular blocky structure; firm; many distinct dark gray (10YR 4/1) clay films on faces of peds; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; neutral; gradual wavy boundary.

**BC**—30 to 38 inches; brown (10YR 5/3) loam; moderate coarse subangular blocky structure; friable; common distinct dark gray (10YR 4/1) clay films on faces of peds and in pores; common prominent gray (10YR 6/1) carbonate accumulations on faces of peds; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; 3 percent gravel; strongly effervescent; moderately alkaline; gradual wavy boundary.

**Cd**—38 to 80 inches; brown (10YR 5/3) loam; weak very coarse prismatic structure; very firm; few prominent gray (10YR 6/1) carbonates on vertical faces of peds; few medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are along vertical faces of prisms; 5 percent gravel; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 24 to 40 inches

*Depth to carbonates:* 20 to 40 inches

*Particle-size control section:* 20 to 34 percent clay; 30 to 60 percent sand

*Ap or A horizon:*

Hue—10YR

Value—3 to 5, 6 or more dry

Chroma—2 or 3

Texture—loam or fine sandy loam

Reaction—moderately acid to neutral

Content of rock fragments—0 to 5 percent

*Eg or BEg horizon:*

Hue—10YR

Value—5 or 6

Chroma—1 or 2

Texture—loam, silt loam, fine sandy loam, or sandy loam

Reaction—moderately acid to neutral

Content of rock fragments—0 to 5 percent

*Btg or Bt horizon:*

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 6

Texture—clay loam, sandy clay loam, or loam

Reaction—strongly acid to neutral

Content of rock fragments—0 to 5 percent

*BC or CB horizon:*

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 6

Texture—loam, fine sandy loam, or sandy loam

Reaction—slightly acid to moderately alkaline

Content of rock fragments—0 to 10 percent gravel; 0 to 1 percent cobbles or stones

*Cd horizon:*

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—2 to 6

Texture—loam, fine sandy loam, or sandy loam

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—0 to 10 percent gravel; 0 to 1 percent cobbles or stones

## Crumstown Series

*Taxonomic classification:* Coarse-loamy, mixed, active, mesic Typic Hapludalfs

### Typical Pedon for the Series

Crumstown fine sandy loam (fig. 21), on a north-facing slope of 2 percent, in a cultivated field at an elevation of 827 feet; St. Joseph County, Indiana; about 4 miles north of Lake of the Woods; 1,520 feet east and 200 feet south of the northwest corner of sec. 18, T. 35 N., R. 3 E.; USGS Bremen, Indiana, topographic quadrangle; lat. 41 degrees 29 minutes 32.6 seconds N. and long. 86 degrees 13 minutes 42.1 seconds W., NAD 27; UTM Zone 16, 564411 Easting and 4593713 Northing, NAD 83.

**Ap**—0 to 9 inches; dark brown (10YR 3/3) fine sandy loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; 2 percent gravel; neutral; abrupt smooth boundary.

**Bt1**—9 to 19 inches; dark yellowish brown (10YR 4/4) fine sandy loam; moderate medium subangular blocky structure; friable; many faint brown (10YR 4/3) clay films on faces of peds; 3 percent gravel; moderately acid; clear wavy boundary.

**Bt2**—19 to 26 inches; dark yellowish brown (10YR 4/4) loamy sand; weak medium subangular blocky structure; very friable; common faint brown (10YR 4/3) clay bridges between sand grains and gravel; 2 percent gravel; strongly acid; clear wavy boundary.

**Bt3**—26 to 35 inches; dark yellowish brown (10YR 4/4)

- loamy sand; weak coarse subangular blocky structure; very friable; few faint brown (10YR 4/3) clay bridges between sand grains and gravel; 10 percent gravel; strongly acid; clear wavy boundary.
- Bt4—35 to 45 inches; dark yellowish brown (10YR 4/6) sand; weak coarse subangular blocky structure; very friable; few faint brown (10YR 4/3) clay bridges between sand grains and gravel; 5 percent gravel; strongly acid; clear wavy boundary.
- BC1—45 to 70 inches; brown (10YR 4/3) loamy sand; weak coarse subangular blocky structure; very friable; common fine prominent strong brown (7.5YR 5/6) masses that have accumulated iron oxide and are in the matrix; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; 2 percent gravel; moderately acid; clear wavy boundary.
- BC2—70 to 100 inches; yellowish brown (10YR 5/4) fine sand; weak coarse subangular blocky structure; very friable; few fine distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 2 percent gravel; moderately acid.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 20 to 50 inches

*Thickness of the solum:* 40 to more than 80 inches

*Depth to carbonates:* 40 to more than 80 inches

*Depth to redoximorphic features:* 40 to 80 inches

*Content of clay in the particle-size control section:* 10 to 18 percent

#### *Ap horizon:*

Hue—7.5YR or 10YR

Value—3 to 5, 6 or more dry

Chroma—2 or 3

Texture—fine sandy loam

Reaction—strongly acid to neutral

Content of rock fragments—1 to 10 percent

#### *Bt horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—4 to 6

Texture—sandy loam, gravelly sandy loam, fine sandy loam, loamy sand, or sand; coarse sandy loam or gravelly coarse sandy loam in the lower part in some pedons

Reaction—strongly acid to slightly acid in the upper part; strongly acid to neutral in the lower part

Content of rock fragments—1 to 30 percent

#### *BC horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—2 to 6

Texture—loamy sand, sandy loam, gravelly loamy sand, gravelly sandy loam, sand, or fine sand

Reaction—moderately acid to neutral

Content of rock fragments—1 to 30 percent

### ***Del Rey Series***

*Taxonomic classification:* Fine, illitic, mesic Aeric Epiaqualfs

### **Typical Pedon for MLRA 111**

Del Rey silty clay loam, 0 to 1 percent slopes, in a cultivated field at an elevation of 797 feet; Elkhart County, Indiana; about 3.25 miles south and 2 miles west of Dunlap; 1,000 feet south and 282 feet west of the northeast corner of sec. 9, T. 36 N., R. 5 E.; USGS Foraker, Indiana, topographic quadrangle; lat. 41 degrees 35 minutes 28 seconds N. and long. 85 degrees 56 minutes 46 seconds W., NAD 27; UTM Zone 16, 587837 Easting and 4604921 Northing, NAD 83.

Ap1—0 to 6 inches; brown (10YR 4/3) silty clay loam; weak medium granular structure; friable; common very fine and fine roots throughout; common fine interstitial and tubular pores with moderate continuity; neutral; abrupt smooth boundary.

Ap2—6 to 9 inches; brown (10YR 4/3) silty clay loam; weak fine subangular blocky structure; friable; common very fine and fine roots throughout; common fine interstitial and tubular pores with moderate continuity; neutral; clear wavy boundary.

Bt1—9 to 12 inches; yellowish brown (10YR 5/6) silty clay; moderate fine subangular blocky structure; firm; common very fine and fine roots throughout; common very fine and fine interstitial and tubular pores with low continuity; common distinct grayish brown (10YR 5/2) clay films on faces of peds; many medium prominent gray (10YR 5/1) iron depletions throughout; neutral; clear wavy boundary.

Bt2—12 to 22 inches; yellowish brown (10YR 5/4) silty clay; moderate medium subangular blocky structure; firm; common fine roots throughout; common very fine and fine interstitial and tubular pores with low continuity; few distinct grayish brown (10YR 5/2) and dark gray (10YR 4/1) clay films on faces of peds; many medium distinct grayish brown (10YR 5/2) iron depletions throughout; neutral; clear wavy boundary.

Bt3—22 to 26 inches; yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; common very fine roots throughout; common very fine and fine interstitial and tubular



pores with low continuity; few distinct gray (10YR 5/1) and dark gray (10YR 4/1) clay films on faces of peds; many medium distinct grayish brown (10YR 5/2) iron depletions throughout; neutral; clear wavy boundary.

BC—26 to 33 inches; yellowish brown (10YR 5/6) silty clay loam; weak medium prismatic structure parting to moderate medium and coarse subangular blocky; firm; common very fine roots in cracks; common very fine interstitial and tubular pores with low continuity; few distinct gray (10YR 5/1) clay films on faces of peds; few distinct white (10YR 8/1) carbonate coatings on vertical faces of peds; few medium irregular white (10YR 8/1) carbonate nodules throughout; many medium prominent grayish brown (10YR 5/2) iron depletions throughout; strongly effervescent; moderately alkaline; clear wavy boundary.

C1—33 to 48 inches; yellowish brown (10YR 5/6) silty clay loam; weak very coarse prismatic structure; very firm; common very fine roots in cracks; common very fine interstitial and tubular pores with low continuity; few distinct gray (10YR 5/1) clay films on faces of peds; few distinct white (10YR 8/1) carbonate coatings on vertical faces of peds; few medium irregular white (10YR 8/1) carbonate nodules throughout; many medium prominent grayish brown (10YR 5/2) iron depletions throughout; strongly effervescent; moderately alkaline; clear wavy boundary.

C2—48 to 66 inches; yellowish brown (10YR 5/4) silty clay loam; weak very coarse prismatic structure; very firm; few distinct gray (10YR 6/1) carbonate coatings on vertical faces of peds; few medium irregular white (10YR 8/1) carbonate nodules throughout; common medium distinct grayish brown (10YR 5/2) iron depletions throughout; strongly effervescent; slightly alkaline; clear wavy boundary.

C3—66 to 82 inches; yellowish brown (10YR 5/6) silty clay loam; massive; firm; many medium prominent gray (10YR 5/1) iron depletions throughout; strongly effervescent; moderately alkaline; clear wavy boundary.

Cg—82 to 90 inches; gray (10YR 5/1) silty clay loam; massive; firm; many medium prominent yellowish brown (10YR 5/6) masses in which iron oxide has accumulated throughout; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Thickness of the solum:* 24 to 48 inches

*Content of clay in the particle-size control section:* 35 to 45 percent

*Other features:* The lower part of the B horizon is stratified in some pedons; some strata are silt loam.

#### *Ap or A horizon:*

Hue—10YR

Value—3 or 4

Chroma—1 to 3

Texture—silty clay loam

Reaction—very strongly acid to neutral

#### *E or BE horizon (where present):*

Hue—10YR

Value—4 to 6

Chroma—1 to 3

Reaction—very strongly acid to neutral

#### *Bt, Btg, BC, BCtg, or BCt horizon:*

Hue—10YR to 5Y

Value—4 to 6

Chroma—1 to 6 (Bt or Btg); 1 to 8 (BC, BCtg, or BCt)

Texture—silty clay loam or silty clay

Reaction—very strongly acid to neutral in the Bt or Btg horizon; slightly alkaline or moderately alkaline in the BC, BCtg, or BCt horizon

#### *Cg or C horizon:*

Hue—10YR to 5Y

Value—4 to 6

Chroma—1 to 8

Texture—silt loam or silty clay loam several feet thick; stratified silt loam, silty clay loam, clay loam, sandy loam, sand, or silty clay in some pedons

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—0 to 2 percent

## Edselton Series

*Taxonomic classification:* Marly, euic, mesic Limnic Haplosaprists

### Typical Pedon for the Series

Edselton muck, drained, on a slope of less than 1 percent, under grass vegetation at an elevation of 698 feet; Pulaski County, Indiana; about 2 miles west and 2.5 miles south of Star City; 2,530 feet east and 2,465 feet south of the northwest corner of sec. 25, T. 29 N., R. 2 W.; USGS Star City, Indiana, topographic quadrangle; lat. 40 degrees 56 minutes 00.1 second N. and long. 86 degrees 35 minutes 39.3 seconds W., NAD 27; UTM Zone 16, 534158 Easting and 4531441 Northing, NAD 83.

Oap—0 to 10 inches; muck (sapric material), black (N

2.5/0) broken face and rubbed; a trace of fiber rubbed and unrubbed; moderate medium granular structure; friable; common very fine and fine roots; neutral; abrupt smooth boundary.

Oa—10 to 21 inches; muck (sapric material), very dark brown (10YR 2/2) broken face and rubbed; about 3 percent fiber, a trace rubbed; moderate medium platy structure; friable; common very fine and fine roots; neutral; clear smooth boundary.

Lma1—21 to 28 inches; grayish brown (2.5Y 5/2) marly silt loam; massive; friable; common medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; slightly effervescent; slightly alkaline; clear wavy boundary.

Lma2—28 to 34 inches; light brownish gray (2.5Y 6/2) marly silt loam; massive; friable; many coarse prominent light yellowish brown (10YR 6/4) masses that have accumulated iron oxide and are in the matrix; common medium faint light gray (2.5Y 7/1) iron depletions in the matrix; violently effervescent; moderately alkaline; clear wavy boundary.

Lma3—34 to 44 inches; gray (N 5/0) marly silt loam; massive; friable; common medium prominent light olive brown (2.5Y 5/4) masses that have accumulated iron oxide and are in the matrix; strongly effervescent; moderately alkaline; clear wavy boundary.

Lma4—44 to 48 inches; gray (N 5/0) marly silt loam; massive; friable; few medium prominent light olive brown (2.5Y 5/3) masses that have accumulated iron oxide and are in the matrix; strongly effervescent; moderately alkaline; clear wavy boundary.

2Cg—48 to 80 inches; gray (2.5Y 5/1) sand; single grain; loose; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Depth to the marly material (Lma horizon):* 16 to 47 inches

*Depth to sand:* Typically 30 to 51 inches but can be as shallow as a depth of 24 inches

*Oap horizon (where present):*

Hue—10YR or N

Value—2, 2.5, or 3

Chroma—0 to 2

Texture—muck (sapric material)

Reaction—strongly acid to slightly alkaline

*Oa horizon:*

Hue—5YR to 10YR, or N

Value—2, 2.5, or 3

Chroma—0 to 3

Texture—muck (sapric material)

Reaction—strongly acid to slightly alkaline

*Lma horizon:*

Hue—10YR to 5Y, or N

Value—4 to 8

Chroma—0 to 2

Texture—marly silt loam; coprogenous material less than 2 inches thick present above the marly silt loam in some pedons

Reaction—slightly alkaline or moderately alkaline

*2Cg horizon:*

Hue—10YR or 2.5Y

Value—5 to 7

Chroma—1 or 2

Texture—sand, coarse sand, fine sand, or loamy sand or the gravelly analogs of these textures

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—0 to 25 percent

## Edwards Series

*Taxonomic classification:* Marly, euic, mesic Limnic Haplosaprists

### Typical Pedon for the Series

Edwards muck (fig. 22), on a slope of less than 1 percent, in an idle area under vegetation of shrubs and trees at an elevation of 955 feet; Jackson County, Michigan; within the city limits of Jackson; 924 feet south and 1,320 feet east of northwest corner of sec. 36, T. 2 S., R. 1 W.; USGS Jackson North, Michigan, topographic quadrangle; lat. 42 degrees 15 minutes 45 seconds N. and long. 84 degrees 22 minutes 30 seconds W., NAD 27; UTM Zone 16, 716512 Easting and 4682261 Northing, NAD 83.

Oa1—0 to 7 inches; muck (sapric material), black (N 2.5/0) broken face and rubbed; a trace of fiber unrubbed and rubbed; weak medium subangular blocky structure parting to moderate coarse granular; very friable; neutral; clear smooth boundary.

Oa2—7 to 13 inches; muck (sapric material), dark reddish brown (5YR 3/2) broken face and black (5YR 2.5/1) rubbed; 8 percent fiber unrubbed, a trace of fiber rubbed; moderate medium subangular blocky structure; very friable; slightly alkaline; clear wavy boundary.

Oa3—13 to 17 inches; muck (sapric material), dark reddish brown (5YR 3/2) broken face and black (5YR 2.5/1) rubbed; 35 percent fiber, 5 percent rubbed; weak thin platy structure; very friable; slightly alkaline; clear smooth boundary.

Oa4—17 to 24 inches; muck (sapric material), 50 percent very dark gray (5YR 3/1) and 50 percent dark reddish brown (5YR 3/3) broken face, black (5YR 2.5/1) rubbed; 25 percent fiber, 2 percent rubbed; weak thin platy structure; friable; neutral; abrupt smooth boundary.

Lma1—24 to 40 inches; 90 percent gray (10YR 5/1) and 10 percent gray (10YR 6/1) marly silty clay loam; massive; friable; 2-inch-thick strata of muck (sapric material) at 37 inches; prominent dark yellowish brown (10YR 4/6) masses that have accumulated iron oxide and are around organic remnants; violently effervescent throughout; moderately alkaline; gradual smooth boundary.

Lma2—40 to 85 inches; grayish brown (10YR 5/2) marly silt loam; massive; friable; black (N 2.5/0) organic spots; violently effervescent throughout; moderately alkaline.

### Range in Characteristics

*Depth to marly material (Lma horizon):* 16 to 51 inches

*Organic fibers:* Derived primarily from herbaceous plants but some layers contain as much as 20 percent woody material.

*Carbonates:* Present in the organic layer in some pedons.

*Other features:* Marly material has a layer of sandy or loamy material less than 12 inches thick within a depth of 51 inches in some pedons. Some pedons have thin strata less than 3 inches thick of muck (sapric material).

*Surface tier of Oa1 or Oap horizon:*

Hue—10YR or N

Value—2, 2.5, or 3

Chroma—0 to 2

Texture—muck (sapric material)

Reaction—very strongly acid to slightly alkaline

*Subsurface and bottom tiers of Oa horizon:*

Hue—5YR to 10YR, or N

Value—2 to 4

Chroma—0 to 3

Texture—dominantly muck (sapric material); thin layers less than 10 inches thick of mucky peat (hemic material) are in some pedons

Reaction—very strongly acid to slightly alkaline

*Lma horizon:*

Hue—10YR to 5Y

Value—4 to 8

Chroma—1 or 2

Texture—marly silt loam or marly silty clay loam; coprogenous material present above the marly material in some pedons

Reaction—neutral to moderately alkaline

## Elston Series

*Taxonomic classification:* Coarse-loamy, mixed, active, mesic Typic Argiudolls

### Typical Pedon for the Series

Elston sandy loam, on a convex slope of 1 percent, in a cultivated field at an elevation of about 530 feet; Vigo County, Indiana; about 3 miles west of Miltonville; 1,300 feet east and 500 feet north of the center of sec. 14, T. 13 N., R. 9 W.; USGS New Goshen, Indiana, topographic quadrangle; lat. 39 degrees 34 minutes 30 seconds N. and long. 87 degrees 22 minutes 40 seconds W., NAD 27; UTM Zone 16, 467551 Easting and 4380659 Northing, NAD 83.

Ap—0 to 10 inches; very dark brown (10YR 2/2) sandy loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; very friable; moderately acid; abrupt smooth boundary.

A—10 to 20 inches; very dark brown (10YR 2/2) sandy loam, dark grayish brown (10YR 4/2) dry; weak coarse subangular blocky structure; friable; moderately acid; gradual wavy boundary.

Bt1—20 to 34 inches; dark brown (7.5YR 3/4) sandy loam, light brownish gray (10YR 6/2) dry; weak coarse subangular blocky structure; very friable; faint dark brown (7.5YR 3/2) clay films on some sand grains and bridges between sand grains; few gravel; moderately acid; gradual wavy boundary.

Bt2—34 to 45 inches; brown (7.5YR 4/4) loamy sand; weak coarse subangular blocky structure; very friable; faint dark brown (7.5YR 3/2) clay films on sand grains and bridges between sand grains; few gravel; moderately acid; gradual wavy boundary.

BC—45 to 72 inches; brown (7.5YR 4/4) loamy sand; single grain; loose; few gravel; moderately acid; clear wavy boundary.

C—72 to 80 inches; pale brown (10YR 6/3) fine sand and sand; single grain; loose; few gravel; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Thickness of the mollic epipedon:* 10 to 20 inches

*Depth to the base of the argillic horizon:* 40 to 60 inches

*Thickness of the solum:* 50 to 80 inches

*Series control section:* The sand fraction throughout the solum is dominantly medium or coarser; the content of rock fragments ranges from 0 to 14 percent throughout.

*Depth to calcareous sand and gravelly sand:* 5 to 8 feet

*A or Ap horizon:*

Hue—10YR  
 Value—2 or 3  
 Chroma—1 to 3  
 Texture—sandy loam  
 Reaction—strongly acid to neutral

*Bt horizon:*

Hue—5YR to 10YR; typically redder than 10YR  
 Value—3 to 5  
 Chroma—2 to 6  
 Texture—loam or sandy loam; subhorizons of sandy clay loam or loamy sand  
 Reaction—strongly acid to slightly acid

*BC horizon:*

Hue—5YR to 10YR; typically redder than 10YR  
 Value—3 to 5  
 Chroma—2 to 6  
 Texture—loamy sand or sand  
 Reaction—strongly acid to slightly acid

*C horizon:*

Hue—10YR  
 Value—5 or 6  
 Chroma—3 or 4  
 Texture—fine sand or sand; calcareous sand and gravelly sand at a depth of 5 to 8 feet  
 Reaction—moderately acid to moderately alkaline

**Gilford Series**

*Taxonomic classification:* Coarse-loamy, mixed, superactive, mesic Typic Endoaquolls

**Typical Pedon for the Series**

Gilford sandy loam (fig. 23), on a slope of less than 1 percent, in a cultivated field at an elevation of 766 feet; St. Joseph County, Indiana; about 6 miles east and 3 miles north of South Bend; 1,900 feet west and 50 feet north of the southeast corner of sec. 24, T. 38 N., R. 3 E.; USGS South Bend East, Indiana, topographic quadrangle; lat. 41 degrees 43 minutes 28.9 seconds N. and long. 86 degrees 07 minutes 36.0 seconds W., NAD 27; UTM Zone 16, 572638 Easting and 4619584 Northing, NAD 83.

Ap—0 to 11 inches; black (10YR 2/1) sandy loam, dark gray (10YR 4/1) dry; moderate fine granular structure; friable; slightly acid; abrupt smooth boundary.

A—11 to 14 inches; very dark gray (10YR 3/1) sandy loam, gray (10YR 5/1) dry; weak fine subangular blocky structure; friable; slightly acid; gradual wavy boundary.

Bg1—14 to 20 inches; gray (10YR 5/1) sandy loam;

weak medium subangular blocky structure; friable; common fine prominent yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; moderately acid; clear irregular boundary.

Bg2—20 to 32 inches; gray (10YR 5/1) sandy loam; moderate medium subangular blocky structure; firm; common fine prominent yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; slightly acid; clear wavy boundary.

BCg—32 to 38 inches; gray (10YR 6/1) loamy sand; weak fine subangular blocky structure; very friable; common medium prominent strong brown (7.5YR 5/6) masses in which iron oxide has accumulated; neutral; clear wavy boundary.

Cg1—38 to 48 inches; gray (10YR 6/1) sand; single grain; loose; neutral; clear wavy boundary.

Cg2—48 to 80 inches; gray (10YR 6/1) coarse sand and sand; single grain; loose; strongly effervescent; moderately alkaline.

**Range in Characteristics**

*Depth to the base of the cambic horizon:* 24 to 50 inches

*Depth to the BCg horizon:* 30 to 40 inches

*Depth to carbonates:* Present in at least one horizon between a depth of 40 and 55 inches

*Content of rock fragments:* 0 to 3 percent fine gravel in the upper part of the series control section; 0 to 10 percent in the lower part

*Ap or A horizon:*

Hue—10YR or N  
 Value—2, 2.5, or 3  
 Chroma—0 to 2  
 Texture—fine sandy loam or sandy loam  
 Reaction—moderately acid to neutral

*Bg horizon:*

Hue—10YR to 5Y  
 Value—4 to 6  
 Chroma—1 or 2  
 Texture—fine sandy loam or sandy loam  
 Reaction—moderately acid to neutral

*BCg horizon:*

Hue—7.5YR to 2.5Y  
 Value—4 to 6  
 Chroma—1 or 2  
 Texture—loamy sand, loamy fine sand, fine sand, or sand  
 Reaction—slightly acid or neutral

*Cg or C horizon:*

Hue—10YR or 2.5Y



Value—4 to 7

Chroma—1 to 3

Texture—loamy sand, sand, coarse sand, or fine sand

Reaction—slightly acid or neutral above a depth of 40 inches; neutral to moderately alkaline below a depth of 40 inches

### **Henrietta Series**

*Taxonomic classification:* Coarse-loamy, mixed, superactive, nonacid, mesic Histic Humaquepts

#### **Typical Pedon for the Series**

Henrietta muck, in a nearly level area in a cultivated field at an elevation of 908 feet; Jackson County, Michigan; about 3.5 miles southwest of Munith; 1,800 feet south and 750 feet east of the northwest corner of sec. 26, T. 1 S., R. 1 E.; USGS Gilletts Lake, Michigan, topographic quadrangle; lat. 42 degrees 21 minutes 34.2 seconds N. and long. 84 degrees 17 minutes 17.3 seconds W., NAD 27; UTM Zone 16, 723332 Easting and 4693258 Northing, NAD 83.

Oap—0 to 12 inches; muck (sapric material), black (N 2.5/0) broken face and rubbed; 3 percent fiber; moderate fine subangular blocky structure; very friable; common fine roots; moderately acid; abrupt smooth boundary.

Bg1—12 to 18 inches; light brownish gray (10YR 6/2) loamy fine sand; weak fine subangular blocky structure; very friable; common fine roots; black (N 2.5/0) sapric material in root channels ( $\frac{1}{8}$ - to  $\frac{1}{4}$ -inch diameter); common fine prominent yellowish brown (10YR 5/6) masses in which iron oxide has accumulated; 3 percent gravel; slightly acid; clear wavy boundary.

Bg2—18 to 33 inches; stratified gray (10YR 6/1) silt loam and fine sandy loam and light brownish gray (10YR 6/2) fine sand; moderate medium subangular blocky structure; friable (silt loam and fine sandy loam part); single grain; loose (fine sand part); few fine roots; black (N 2.5/0) sapric material in root channels ( $\frac{1}{8}$ - to  $\frac{1}{4}$ -inch diameter); 3 percent gravel; neutral; gradual wavy boundary.

Bg3—33 to 43 inches; gray (10YR 6/1) stratified silt loam and fine sandy loam; moderate coarse subangular blocky structure; friable; black (N 2.5/0) sapric material in root channels ( $\frac{1}{8}$ - to  $\frac{1}{4}$ -inch diameter); many medium prominent light olive brown (2.5Y 5/4) masses in which iron oxide has accumulated; 3 percent gravel; slightly alkaline; gradual wavy boundary.

Cg—43 to 60 inches; light brownish gray (10YR 6/2)

loamy fine sand; massive; very friable; thin lenses of silt loam and fine sandy loam; slightly effervescent; moderately alkaline.

#### **Range in Characteristics**

*Thickness of the solum:* 20 to 50 inches

*Particle-size control section:* 5 to 18 percent clay; 35 to 55 percent fine sand or coarser

*Oap horizon:*

Hue—5YR to 10YR, or N

Value—2, 2.5, or 3

Chroma—0 to 3

Texture—muck (sapric material)

Reaction—moderately acid to slightly alkaline

*Bg horizon:*

Hue—10YR to 5Y

Value—4 to 6

Chroma—1 or 2

Texture—silt loam, fine sandy loam, or sandy loam; strata of sandy clay loam, loam, loamy fine sand, loamy sand, fine sand, or sand

Reaction—moderately acid to slightly alkaline

Content of rock fragments—0 to 14 percent

*Cg horizon:*

Hue—10YR to 5Y

Value—4 to 6

Chroma—1 or 2

Texture—stratified silt loam, loam, sandy loam, fine sandy loam, loamy fine sand, loamy sand, or sand

Reaction—moderately alkaline

Content of rock fragments—0 to 14 percent

### **Hillsdale Series**

*Taxonomic classification:* Coarse-loamy, mixed, active, mesic Typic Hapludalfs

#### **Typical Pedon for the Series**

Hillsdale sandy loam (fig. 24), on a convex slope of 4 percent, in a cultivated field at an elevation of 873 feet; St. Joseph County, Michigan; about 2 miles south and 1.5 miles west of Mendon; 60 feet west and 130 feet north of the southeast corner of sec. 5, T. 6 S., R. 10 W.; USGS Nottawa, Michigan, topographic quadrangle; lat. 41 degrees 58 minutes 13.3 seconds N. and long. 85 degrees 29 minutes 18.89 seconds W., NAD 27; UTM Zone 16, 625232 Easting and 4647597 Northing, NAD 83.

Ap—0 to 8 inches; brown (10YR 4/3) sandy loam, pale brown (10YR 6/3) dry; weak fine granular

structure; friable; 5 percent gravel and 3 percent cobbles; neutral; abrupt smooth boundary.

EB—8 to 14 inches; yellowish brown (10YR 5/6) sandy loam; moderate medium subangular blocky structure; friable; 5 percent gravel and 3 percent cobbles; slightly acid; clear wavy boundary.

Bt1—14 to 31 inches; dark yellowish brown (10YR 4/6) sandy loam; moderate medium subangular blocky structure; friable; many distinct brown (7.5YR 4/4) clay films on faces of peds; 5 percent gravel and 3 percent cobbles; slightly acid; clear smooth boundary.

Bt2—31 to 38 inches; dark yellowish brown (10YR 4/6) sandy loam; weak medium subangular blocky structure; friable; common distinct brown (7.5YR 4/4) clay films on faces of peds; 5 percent gravel and 3 percent cobbles; slightly acid; clear smooth boundary.

Bt3—38 to 44 inches; yellowish brown (10YR 5/6) sandy loam; weak coarse subangular blocky structure; friable; few distinct brown (7.5YR 4/4) clay films on faces of peds; 5 percent gravel and 3 percent cobbles; slightly acid; clear wavy boundary.

BC—44 to 84 inches; yellowish brown (10YR 5/4) sandy loam; weak coarse subangular blocky structure; friable; 5 percent gravel and 3 percent cobbles; neutral.

### Range in Characteristics

*Thickness of the solum:* 40 to more than 80 inches; normally corresponds to the depth to carbonates

*Content of rock fragments:* Few to 14 percent gravel throughout the series control section; some individual subhorizons have none

*Particle-size control section:* Less than 18 percent clay; less than 50 percent fine sand and very fine sand

*Series control section:* 50 to 85 percent sand

#### *Ap horizon:*

Hue—10YR

Value—3 or 4, 6 or more dry

Chroma—1 to 3

Texture—sandy loam

Reaction—very strongly acid to neutral

#### *E horizon (where present):*

Hue—10YR

Value—5 to 7

Chroma—2 to 4

Texture—sandy loam, fine sandy loam, loam, or loamy sand

#### *EB horizon:*

Hue—10YR

Value—4 to 7

Chroma—3 to 6

Texture—sandy loam, fine sandy loam, loam, or loamy sand

#### *Bt horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 6

Texture—sandy loam, sandy clay loam, or loam

Reaction—very strongly acid to slightly acid

#### *BC horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 8

Texture—sandy loam or loamy sand; pockets of sand or loamy sand in some pedons

Reaction—strongly acid to neutral

#### *C horizon:*

Hue—7.5YR or 10YR

Value—5 or 6

Chroma—3 or 4

Texture—sandy loam or fine sandy loam; pockets of sand or loamy sand in some pedons

Reaction—slightly alkaline or moderately alkaline

## Houghton Series

*Taxonomic classification:* Euic, mesic Typic Haplosaprists

### Typical Pedon for the Series

Houghton muck, in a level area in a cultivated field at an elevation of 812 feet; Clinton County, Michigan; about 3 miles northeast of Bath; 200 feet north and 400 feet east of the southwest corner of sec. 12, T. 5 N., R. 1 W.; USGS Bath, Michigan, topographic quadrangle; lat. 42 degrees 49 minutes 42.69 seconds N. and long. 84 degrees 22 minutes 53.53 seconds W., NAD 27; UTM Zone 16, 714027 Easting and 4745102 Northing, NAD 83.

Oa1—0 to 9 inches; muck (sapric material), black (N 2.5/0) broken face and rubbed; about 5 percent fiber, a trace rubbed; weak coarse subangular blocky structure; neutral (pH 7.0 in KCl); abrupt smooth boundary.

Oa2—9 to 13 inches; muck (sapric material), black (N 2.5/0) broken face, very dark brown (7.5YR 2.5/2) rubbed; about 5 percent fiber, a trace rubbed; weak medium granular structure; neutral (pH 7.0 in KCl); abrupt smooth boundary.

Oa3—13 to 24 inches; muck (sapric material), dark reddish brown (5YR 3/2) broken face, dark reddish

brown (5YR 2.5/2) rubbed; about 15 percent fiber, less than 5 percent rubbed; massive, breaking to thick platy fragments; neutral (pH 7.0 KCl); abrupt smooth boundary.

Oa4—24 to 32 inches; muck (sapric material), black (5YR 2.5/1) broken face and rubbed; about 10 percent fiber, a trace rubbed; massive; about 1 percent woody fragments; neutral (pH 7.0 in KCl); clear wavy boundary.

Oa5—32 to 48 inches; muck (sapric material), dark reddish brown (5YR 2.5/2) broken face, black (5YR 2.5/1) rubbed; about 20 percent fiber, less than 10 percent rubbed; massive, breaking to thick platy fragments; neutral (pH 7.0 in KCl); abrupt smooth boundary.

Oa6—48 to 80 inches; muck (sapric material), dark reddish brown (5YR 2.5/2) broken face and rubbed; about 10 percent fiber, less than 10 percent rubbed; massive; slightly sticky; about 15 percent mineral soil; neutral (pH 7.0 in KCl).

### Range in Characteristics

*Thickness of the organic layers:* More than 51 inches

*Organic fibers:* Derived primarily from herbaceous plants but some pedons contain individual layers which contain as much as 30 percent woody material; the woody fragment content averages less than 15 percent in the control section.

*Oa horizon:*

Hue—5YR to 10YR, or N

Value—2, 2.5, or 3

Chroma—0 to 3

Texture—muck (sapric material)

Reaction—very strongly acid to slightly alkaline

### Jamestown Series

*Taxonomic classification:* Fine-loamy, mixed, superactive, nonacid, mesic Aeric Epiaquepts

### Typical Pedon for the Series

Jamestown silt loam, occasionally flooded, in a nearly level area in a cultivated field at an elevation of 807 feet; Elkhart County, Indiana; about 1 mile northwest of Wakarusa; 860 feet east and 240 feet south of the northwest corner of sec. 26, T. 36 N., R. 4 E.; USGS Wakarusa, Indiana, topographic quadrangle; lat. 41 degrees 32 minutes 02 seconds N. and long. 86 degrees 02 minutes 10 seconds W., NAD 27; UTM Zone 16, 580407 Easting and 4598481 Northing, NAD 83.

Ap1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; common very fine

roots throughout; neutral; abrupt smooth boundary.

Ap2—5 to 11 inches; dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; moderate fine subangular blocky structure; friable; common very fine roots throughout; common very fine to medium interstitial and tubular pores with moderate continuity; neutral; abrupt smooth boundary.

Bw—11 to 19 inches; brown (10YR 5/3) loam; moderate medium subangular blocky structure; friable; common very fine roots throughout; common very fine and fine tubular pores with moderate continuity; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; common medium distinct dark brown (7.5YR 3/2) rounded masses in which iron and manganese oxide have accumulated throughout; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear smooth boundary.

Bg1—19 to 28 inches; grayish brown (10YR 5/2) loam; moderate medium subangular blocky structure; friable; common very fine roots throughout; common very fine and fine tubular pores with moderate continuity; many medium distinct dark yellowish brown (10YR 4/4) and common medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; common medium distinct dark brown (7.5YR 3/2) rounded masses in which iron and manganese oxide have accumulated throughout; neutral; clear smooth boundary.

Bg2—28 to 33 inches; grayish brown (10YR 5/2) loam; moderate medium subangular blocky structure; friable; common very fine and fine tubular pores with moderate continuity; many medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; common medium distinct dark brown (7.5YR 3/2) rounded masses in which iron and manganese oxide have accumulated throughout; neutral; clear wavy boundary.

2BC1—33 to 44 inches; dark yellowish brown (10YR 4/4) sandy loam; weak coarse subangular blocky structure; friable; common very fine and fine tubular pores with moderate continuity; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; common medium distinct dark brown (7.5YR 3/2) rounded masses in which iron and manganese oxide have accumulated throughout; common medium distinct grayish brown (10YR

5/2) and faint brown (10YR 5/3) iron depletions in the matrix; neutral; clear wavy boundary.

2BC2—44 to 52 inches; brown (10YR 5/3) loamy sand; weak coarse subangular blocky structure; very friable; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; 6 percent gravel; neutral; clear wavy boundary.

3Cd1—52 to 68 inches; brown (10YR 5/3) loam; massive; very firm; many medium faint yellowish brown (10YR 5/4) masses of iron oxide accumulation in the matrix; 2 percent gravel; slightly effervescent; slightly alkaline; clear wavy boundary.

3Cd2—68 to 80 inches; gray (N 5/0) loam; massive; very firm; common medium faint greenish gray (10Y 5/1) iron depletions in the matrix; 2 percent gravel; strongly effervescent; slightly alkaline.

### Range in Characteristics

*Thickness of the solum:* 40 to 70 inches

*Depth to carbonates:* 40 to 70 inches

*Particle-size control section:* 18 to 33 percent clay;  
15 to 45 percent fine sand or coarser

*Ap or A horizon:*

Hue—10YR

Value—3 or 4, 6 or more dry

Chroma—2 or 3

Texture—silt loam

Reaction—slightly acid or neutral

*Bw or Bg horizon:*

Hue—10YR to 5Y

Value—4 to 6

Chroma—1 to 4

Texture—silt loam, loam, or silty clay loam

Reaction—slightly acid or neutral

*2BC or 2BCg horizon:*

Hue—10YR to 5Y

Value—4 to 6

Chroma—1 to 6

Texture—sandy loam in the upper part and loamy sand in the lower part; fine sandy loam, fine sand, or sand; texture becomes coarser with depth; subhorizons of loamy sand or coarser present in all pedons

Reaction—slightly acid to slightly alkaline

Content of rock fragments—0 to 10 percent

*3Cd horizon:*

Hue—10YR to 5Y, or N

Value—5 or 6

Chroma—0 to 6

Texture—loam or fine sandy loam

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—0 to 10 percent

## Madaus Series

*Taxonomic classification:* Coarse-silty over sandy or sandy-skeletal, carbonatic over mixed, mesic Histic Humaquepts

### Typical Pedon for the Series

Madaus muck (fig. 25), on a slope of less than 1 percent, in a cultivated field at an elevation of 764 feet; Elkhart County, Indiana; about 3 miles east of Elkhart; 90 feet south and 600 feet west of the northeast corner of sec. 7, T. 37 N., R. 6 E.; USGS Bristol, Indiana, topographic quadrangle; lat. 41 degrees 40 minutes 53 seconds N. and long. 85 degrees 52 minutes 23 seconds W., NAD 27; UTM Zone 16, 593795 Easting and 4615021 Northing, NAD 83.

Oap—0 to 9 inches; muck (sapric material), black (N 2.5/0) broken face and rubbed; moderate fine granular structure; very friable; common very fine and fine roots throughout; about 1 percent fiber, a trace rubbed; 1 percent shell fragments; slightly effervescent; slightly alkaline; abrupt smooth boundary.

C1—9 to 13 inches; gray (5Y 6/1) silt loam (marl); massive; friable; common very fine and fine roots throughout; common very fine and fine interstitial and tubular pores with moderate continuity; common fine dark reddish brown (5YR 3/4) irregular masses that have accumulated iron oxide and are in root channels; about 1 percent fiber, a trace rubbed; 3 percent shell fragments; violently effervescent; moderately alkaline; clear smooth boundary.

C2—13 to 31 inches; light yellowish brown (10YR 6/4) silt loam (marl); massive; friable; common very fine and fine roots throughout; common very fine and fine interstitial and tubular pores with moderate continuity; common medium distinct gray (10YR 6/1) cylindrical iron depletions in cracks; about 1 percent fiber, less than 1 percent rubbed; 3 percent shell fragments; violently effervescent; moderately alkaline; clear smooth boundary.

C3—31 to 48 inches; gray (10YR 6/1) silt loam (marl); massive; friable; common very fine and fine interstitial and tubular pores with moderate continuity; about 1 percent fiber, less than 1 percent rubbed; 1 percent shell fragments; violently effervescent; moderately alkaline; clear smooth boundary.

2Cg—48 to 80 inches; dark gray (5Y 4/1) sand; single grain; loose; 5 percent gravel; strongly effervescent; moderately alkaline.





Figure 18.—Profile of Antung muck, drained, 0 to 1 percent slopes, showing a thin layer of muck (black layer) above sandy material (light colored material). The scale is in feet.



Figure 19.—Profile of Auten loam, 0 to 1 percent slopes. The scale is in inches.



Figure 20.—Profile of Bainter sandy loam, 0 to 1 percent slopes. The scale is in feet.



Figure 21.—Profile of Crumstown fine sandy loam, 1 to 5 percent slopes. Notice the redoximorphic features start at a depth of 50 inches. The scale is in inches.



Figure 22.—Profile of Edwards muck, drained, 0 to 1 percent slopes. The scale is in feet.



Figure 23.—Profile of Gilford sandy loam, 0 to 1 percent slopes. The scale is in inches.





Figure 24.—Profile of Hillsdale sandy loam, 0 to 1 percent slopes. The pegs indicate the different horizons throughout the profile. The scale is in inches.



Figure 25.—Profile of Madaus muck, drained, 0 to 1 percent slopes, showing a thin layer of muck (black layer) above marl (light colored material). A substratum of sand is below 40 inches (not shown). The scale is in feet.





Figure 26.—Profile of Martisco muck, drained, 0 to 1 percent slopes. Note the dark organic material to a depth of 10 inches and the light colored marl below. The scale is in inches.



Figure 27.—Profile of Oshtemo component of Riddles-Oshtemo fine sandy loams, 0 to 1 percent slopes. The scale is in feet.



Figure 28.—Profile of Schoolcraft loam, 0 to 1 percent slopes.  
The scale is in inches.



Figure 29.—Profile of Tracy sandy loam, 1 to 5 percent slopes.  
The scale is in inches.

### Range in Characteristics

*Thickness of the organic surface layer:* 7 to 16 inches

*Depth to sand:* 17 to 56 inches

*a or Oap horizon:*

Hue—10YR or N

Value—2, 2.5, or 3

Chroma—0 to 2

Reaction—slightly acid to moderately alkaline

Texture—muck (sapric material)

*C horizon:*

Hue—10YR to 5Y

Value—4 to 8

Chroma—1 to 4

Texture—silt loam (marl) or silty clay loam (marl)

Reaction—slightly alkaline or moderately alkaline

*2Cg or 2C horizon:*

Hue—10YR to 5Y

Value—4 to 7

Chroma—1 to 4

Texture—loamy sand, fine sand, sand, or coarse sand or the gravelly analogs of these textures

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—0 to 25 percent

### Martinsville Series

*Taxonomic classification:* Fine-loamy, mixed, active, mesic Typic Hapludalfs

#### Typical Pedon for the Series

Martinsville loam, on a slope of 1 percent, in a cultivated field at an elevation of about 890 feet; Hendricks County, Indiana; 1,050 feet north and 2,000 feet west of the southeast corner of sec. 22, T. 16 N., R. 2 E.; USGS Danville, Indiana, topographic quadrangle; lat. 39 degrees 48 minutes 26 seconds N. and long. 86 degrees 37 minutes 16 seconds W., NAD 27; UTM Zone 16, 532432 Easting and 4406435 Northing, NAD 83.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2)

loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; few fine roots; neutral; abrupt smooth boundary.

BE—8 to 13 inches; brown (10YR 4/3) loam; moderate medium granular structure; friable; few fine roots; neutral; clear wavy boundary.

Bt1—13 to 17 inches; dark yellowish brown (10YR 4/4) clay loam; moderate fine subangular blocky structure; firm; few fine roots; common distinct dark brown (10YR 3/3) organo-clay films on faces of peds; slightly acid; clear wavy boundary.

Bt2—17 to 35 inches; brown (7.5YR 4/4) clay loam; moderate medium subangular blocky structure; firm; few fine roots; many distinct dark brown (10YR 3/3) organo-clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—35 to 43 inches; dark yellowish brown (10YR 4/4) sandy clay loam; moderate coarse subangular blocky structure; friable; common distinct dark yellowish brown (10YR 3/4) clay films on faces of peds; moderately acid; clear wavy boundary.

BC—43 to 53 inches; dark yellowish brown (10YR 3/4) sandy loam; weak coarse subangular blocky structure; very friable; slightly acid; clear wavy boundary.

C—53 to 60 inches; brown (10YR 5/3), pale brown (10YR 6/3) and dark yellowish brown (10YR 3/4) stratified sandy loam, loam, and silt loam; massive; very friable; thin strata of sand; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 40 to 70 inches

*Thickness of the solum:* 40 to 80 inches

*Particle-size control section:* 22 to 33 percent clay; 20 to 50 percent sand

*Content of rock fragments:* 0 to 10 percent throughout the series control section; mainly fine gravel of crystalline, limestone, or igneous lithology

*Other features:* Some pedons have an E or EB horizon.

*Ap or A horizon:*

Hue—10YR

Value—4 or 5; 3 (thin A horizon)

Chroma—2 to 6

Texture—loam

Reaction—strongly acid to neutral

*Bt or BC horizon:*

Hue—7.5YR or 10YR

Value—3 to 6

Chroma—3 to 6

Texture—clay loam, sandy clay loam, silty clay loam, silt loam, or loam in the upper part; loam, sandy clay loam, silt loam, sandy loam, fine sandy loam, or very fine sandy loam or is stratified with these textures in the lower part

Reaction—strongly acid to neutral in the upper part; ranges to slightly alkaline in the lower part

*C horizon:*

Hue—10YR

Value—3 to 6

Chroma—3 to 6

Texture—stratified fine sandy loam, sandy loam,



loam, or silt loam; thin strata of silt, fine sand, loamy sand, loamy fine sand, very fine sandy loam, coarse sand, or sand  
Reaction—slightly alkaline or moderately alkaline

### **Martisco Series**

*Taxonomic classification:* Fine-silty, carbonatic, mesic Histic Humaquepts

#### **Typical Pedon for MLRA 98**

Martisco muck (fig. 26), on a slope of less than 1 percent, in a cultivated field at an elevation of 710 feet; St. Joseph County, Indiana; about 1 mile southwest of South Bend; 650 feet south and 975 feet west of the northeast corner of sec. 20, T. 37 N., R. 2 E.; USGS South Bend West, Indiana, topographic quadrangle; lat. 41 degrees 38 minutes 54 seconds N. and long. 86 degrees 18 minutes 56.9 seconds W., NAD 27; UTM Zone 16, 556974 Easting and 4610965 Northing, NAD 83.

- Oap—0 to 12 inches; muck (sapric material), 80 percent black (N 2.5/0) broken face and rubbed, 20 percent light gray (2.5Y 7/2) silt loam (marl); weak fine granular structure; very friable; strongly effervescent; slightly alkaline; abrupt smooth boundary.
- C1—12 to 26 inches; light gray (2.5Y 7/2) silt loam (marl); about 10 percent fiber, a trace rubbed; massive; friable; many fine prominent yellow (10YR 7/6) masses in which iron oxide has accumulated; 15 percent shell fragments; violently effervescent; moderately alkaline; clear wavy boundary.
- C2—26 to 38 inches; gray (2.5Y 6/1) silt loam (marl); massive; friable; common fine prominent yellow (10YR 7/6) masses in which iron oxide has accumulated; 15 percent shell fragments; violently effervescent; moderately alkaline; clear wavy boundary.
- C3—38 to 50 inches; grayish brown (2.5Y 5/2) silt loam (marl); massive; friable; common fine faint light olive brown (2.5Y 5/3) masses in which iron oxide has accumulated; 10 percent shell fragments; violently effervescent; moderately alkaline; clear smooth boundary.
- C4—50 to 60 inches; dark gray (N 4/0) silt loam (marl); massive; friable; common medium prominent light olive brown (2.5Y 5/4) masses in which iron oxide has accumulated; 10 percent shell fragments; violently effervescent; moderately alkaline; clear smooth boundary.
- C5—60 to 66 inches; gray (N 5/0) silt loam (marl); massive; friable; common medium prominent light

olive brown (2.5Y 5/3) and common medium prominent light yellowish brown (2.5Y 6/4) masses in which iron oxide has accumulated; common medium distinct light brownish gray (2.5Y 6/2) iron depletions; 10 percent shell fragments; violently effervescent; moderately alkaline; clear smooth boundary.

- C6—66 to 80 inches; gray (5Y 5/1) silt loam (marl); massive; friable; many medium faint light brownish gray (2.5Y 6/2) iron depletions; 5 percent shell fragments; violently effervescent; moderately alkaline.

#### **Range in Characteristics**

*Thickness of the organic surface layer:* 8 to 16 inches  
*Depth to bedrock:* More than 60 inches

#### *Oap or Oa horizon:*

Hue—5YR to 10YR, or N

Value—2, 2.5, or 3

Chroma—0 to 2

Reaction—slightly acid to moderately alkaline

Texture—muck (sapric material)

#### *C horizon:*

Hue—10YR to 5Y, or N

Value—4 to 8

Chroma—0 to 2

Texture—silt loam (marl)

Reaction—slightly alkaline or moderately alkaline

### **Maumee Series**

*Taxonomic classification:* Sandy, mixed, mesic Typic Endoaquolls

#### **Typical Pedon for the Series**

Maumee loamy sand, on a slope of less than 1 percent, in a cultivated field at an elevation of 657 feet; Porter County, Indiana; about 3.5 miles south of Kouts; 700 feet north and 160 feet east of the southwest corner of sec. 32, T. 33 N., R. 5 W.; USGS Kouts, Indiana, topographic quadrangle; lat. 41 degrees 15 minutes 43.36 seconds N. and long. 87 degrees 1 minute 29.82 seconds W., NAD 27; UTM Zone 16, 497908 Easting and 4567851 Northing, NAD 83.

Ap—0 to 10 inches; black (10YR 2/1) loamy sand, dark gray (10YR 4/1) dry; weak medium granular structure; very friable; few fine and medium roots; neutral; abrupt smooth boundary.

A—10 to 23 inches; very dark gray (10YR 3/1) loamy sand, gray (10YR 5/1) dry; weak coarse subangular blocky structure; very friable; few fine roots; few fine prominent dark yellowish brown



(10YR 3/6) masses that have accumulated iron oxide and are in the matrix; common coarse faint dark grayish brown (10YR 4/2) iron depletions in the matrix; neutral; clear wavy boundary.

Bg1—23 to 32 inches; grayish brown (10YR 5/2) sand; single grain; loose; few fine roots; few fine very dark gray (10YR 3/1) organic matter accumulations in the matrix; few fine prominent dark yellowish brown (10YR 4/6) masses that have accumulated iron oxide and are in the matrix; common coarse faint dark gray (10YR 4/1) iron depletions in the matrix; neutral; clear wavy boundary.

Bg2—32 to 38 inches; grayish brown (10YR 5/2) sand; single grain; loose; few fine roots; common medium distinct yellowish brown (10YR 5/4) and few medium prominent dark yellowish brown (10YR 4/6) masses that have accumulated iron oxide and are in the matrix; neutral; abrupt wavy boundary.

Cg1—38 to 61 inches; light brownish gray (10YR 6/2) fine sand; single grain; loose; common medium prominent brownish yellow (10YR 6/6) masses that have accumulated iron oxide and are in the matrix; neutral; abrupt wavy boundary.

Cg2—61 to 80 inches; grayish brown (10YR 5/2) coarse sand and sand; single grain; loose; slightly alkaline.

### Range in Characteristics

*Thickness of the solum:* 30 to 60 inches

*Thickness of the mollic epipedon:* 15 to 24 inches

*Depth to carbonates:* 40 or more inches

#### Ap or A horizon:

Hue—10YR or N

Value—2, 2.5, or 3

Chroma—0 to 2

Texture—loamy fine sand or loamy sand

Reaction—moderately acid to slightly alkaline

Rock fragment content—0 to 5 percent gravel

#### Bg horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 or 2

Texture—sand, fine sand, loamy sand, or loamy fine sand; thin subhorizons of coarse sandy loam or sandy loam (non-pedogenic) in some pedons

Reaction—moderately acid to neutral

Content of rock fragments—0 to 14 percent gravel

#### Cg horizon:

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 or 2 above a depth of 40 inches; 1 to 3 below 40 inches

Texture—sand, coarse sand, fine sand, loamy sand, or loamy fine sand

Reaction—slightly acid to moderately alkaline

Content of rock fragments—0 to 14 percent gravel

## Metea Series

*Taxonomic classification:* Loamy, mixed, active, mesic Arenic Hapludalfs

### Typical Pedon for the Series

Metea loamy fine sand, on a slope of 4 percent, in a cultivated field at an elevation of 800 feet; Marshall County, Indiana; about 4 miles south and 3 miles west of Plymouth; 700 feet south and 1,600 feet west of the center of sec. 25, T. 33 N., R. 1 E.; USGS Plymouth, Indiana, topographic quadrangle; lat. 41 degrees 16 minutes 45.4 seconds N. and long. 86 degrees 21 minutes 46.3 seconds W., NAD 27; UTM Zone 16, 553357 Easting and 4569962 Northing, NAD 83.

Ap—0 to 9 inches; brown (10YR 4/3) loamy fine sand, light yellowish brown (10YR 6/4) dry; weak fine granular structure; very friable; moderately acid; abrupt smooth boundary.

E—9 to 28 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; moderately acid; abrupt smooth boundary.

Bt1—28 to 32 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; friable; common brown (10YR 4/3) clay bridges between sand grains; 3 percent gravel; moderately acid; clear wavy boundary.

2Bt2—32 to 44 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; friable; common distinct brown (10YR 4/3) clay films on faces of peds; 4 percent gravel; moderately acid; clear wavy boundary.

2C—44 to 80 inches; brown (10YR 5/3) loam; massive; friable; 4 percent gravel; slightly effervescent; moderately alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 40 to 60 inches

*Thickness of the sandy material:* 20 to 40 inches

#### Ap or A horizon:

Hue—10YR

Value—3 to 5, more than 5.5 dry

Chroma—2 to 4

Texture—loamy sand

Reaction—moderately acid to neutral

*E horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—loamy sand, loamy fine sand, sand, or fine sand

Reaction—strongly acid to slightly acid

*Bt horizon:*

Hue—10YR

Value—4 to 6

Chroma—4 to 6

Texture—sandy loam, fine sandy loam, or sandy clay loam

Reaction—moderately acid or slightly acid

Content of rock fragments—0 to 5 percent gravel

*2Bt horizon:*

Hue—10YR

Value—4 or 5

Chroma—3 to 8

Texture—clay loam or loam

Reaction—moderately acid or slightly acid; ranges to neutral in the lower part when there is more than one subhorizon

Content of rock fragments—1 to 10 percent gravel

*2C horizon:*

Hue—10YR

Value—5 or 6

Chroma—3 to 8

Texture—loam or fine sandy loam

Reaction—slightly alkaline or moderately alkaline

**Miami Series***Taxonomic classification:* Fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs**Typical Pedon for the Series**

Miami silt loam, on a convex slope of 3 percent, in a cultivated field at an elevation of 880 feet; Hendricks County, Indiana; 3 miles east of Danville; 800 feet west and 300 feet south of the northeast corner of sec. 6, T. 15 N., R. 1 E.; USGS Brownsburg, Indiana, topographic quadrangle; lat. 39 degrees 46 minutes 31.5 seconds N. and long. 86 degrees 27 minutes 37.2 seconds W., NAD 27; UTM Zone 16, 546217 Easting and 4402976 Northing, NAD 83.

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; neutral; abrupt smooth boundary.

Bt1—8 to 13 inches; dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky

structure; firm; many distinct brown (7.5YR 4/4) clay films on faces of peds and as linings of some pores; 1 percent rock fragments; moderately acid; abrupt wavy boundary.

2Bt2—13 to 23 inches; dark yellowish brown (10YR 4/4) clay loam; strong coarse subangular blocky structure; firm; many distinct brown (7.5YR 4/4) clay films on faces of peds and as linings of some pores; 2 percent rock fragments; strongly acid; clear wavy boundary.

2Bt3—23 to 31 inches; dark yellowish brown (10YR 4/4) clay loam; moderate coarse subangular blocky structure; firm; many distinct brown (7.5YR 4/4) clay films on faces of peds and as linings of some pores; common fine and medium distinct very dark gray (10YR 3/1) rounded masses that have accumulated iron and manganese and are in the matrix; 5 percent rock fragments; moderately acid; clear wavy boundary.

2BCt—31 to 36 inches; brown (10YR 4/3) loam; weak coarse prismatic structure; friable; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds; common fine and medium distinct very dark gray (10YR 3/1) irregularly shaped masses that have accumulated iron and manganese and are in the matrix; common medium faint light brownish gray (10YR 6/2) irregularly shaped iron depletions in the matrix; 5 percent rock fragments; slightly effervescent; slightly alkaline; clear irregular boundary.

2Cd—36 to 80 inches; brown (10YR 5/3) loam; massive; very firm; few fine distinct very dark gray (10YR 3/1) irregularly shaped masses that have accumulated iron and manganese and are in the matrix; common medium faint grayish brown (10YR 5/2) irregularly shaped iron depletions in the matrix; 5 percent rock fragments; strongly effervescent; moderately alkaline.

**Range in Characteristics**

*Thickness of the loess or silty material:* 0 to 18 inches

*Depth to the base of the argillic horizon:* 24 to 40 inches

*Depth to carbonates:* 20 to 40 inches

*Depth to bedrock:* More than 80 inches

*Ap or A horizon:*

Hue—10YR

Value—3 to 5, 6 dry

Chroma—1 to 4, 2 or 3 dry

Texture—loam or fine sandy loam; severely eroded pedons are clay loam

Reaction—moderately acid to neutral

Content of rock fragments—0 to 5 percent

*E horizon (where present):*

Hue—10YR

Value—5 or 6

Chroma—3 or 4

Texture—loam or silt loam; less commonly fine sandy loam or sandy loam

Reaction—moderately acid to neutral

Content of rock fragments—0 to 5 percent

*Bt or 2Bt horizon:*

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—3 to 6

Texture—silt loam, silty clay loam, loam, or clay loam in the upper part; clay loam in the lower part

Reaction—strongly acid to slightly acid in the upper part; ranges to neutral in the lower part

Content of rock fragments—1 to 10 percent

*BCt, 2BCt, CB, or 2CB horizon:*

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—3 or 4

Texture—loam or less commonly fine sandy loam; clay loam in the upper part in some pedons

Reaction—neutral to moderately alkaline

Content of rock fragments—1 to 10 percent

*Cd or 2Cd horizon:*

Hue—10YR or 2.5Y, or less commonly 7.5YR

Value—5 or 6

Chroma—3 or 4

Texture—loam or less commonly fine sandy loam

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—1 to 10 percent

**Milford Series***Taxonomic classification:* Fine, mixed, superactive, mesic Typic Endoaquolls**Typical Pedon for the Series**

Milford silty clay loam, on a southeast-facing slope of 1 percent, in a cultivated field at an elevation of 643 feet; Iroquois County, Illinois; about 2.5 miles southeast of Gilman; 1,450 feet north and 70 feet east of the southwest corner of sec. 4, T. 26 N., R. 14 W.; USGS Gilman, Illinois, topographic quadrangle; lat. 40 degrees 45 minutes 24 seconds N. and long. 87 degrees 57 minutes 29 seconds W., NAD 27; UTM Zone 16, 419127 Easting and 4512189 Northing, NAD 83.

Ap—0 to 9 inches; black (10YR 2/1) silty clay loam,

dark gray (10YR 4/1) dry; moderate very fine and fine subangular and angular blocky structure; firm; many fine roots; slightly acid; abrupt smooth boundary.

A—9 to 18 inches; black (10YR 2/1) silty clay, dark gray (10YR 4/1) dry; moderate and strong very fine subangular blocky structure; firm; common fine roots; slightly acid; clear smooth boundary.

BA—18 to 22 inches; very dark gray (10YR 3/1) silty clay, gray (10YR 5/1) dry; moderate fine and medium angular blocky structure; very firm; common fine roots; many distinct black (10YR 2/1) organic coatings on faces of pedis; common medium prominent olive brown (2.5Y 4/4) masses that have accumulated iron oxide and are in the matrix; common medium faint dark grayish brown (2.5Y 4/2) iron depletions in the matrix; neutral; clear smooth boundary.

Bg1—22 to 31 inches; gray (5Y 5/1) silty clay loam; moderate medium and coarse prismatic structure parting to moderate medium and coarse angular and subangular blocky; very firm; common fine roots; many faint dark gray (5Y 4/1) pressure faces on faces of pedis; many medium prominent dark yellowish brown (10YR 4/4) masses that have accumulated iron oxide and are in the matrix; few fine black (N 2.5/0) iron and manganese oxide concretions throughout; many medium faint grayish brown (2.5Y 5/2) iron depletions in the matrix; neutral; clear smooth boundary.

Bg2—31 to 42 inches; gray (5Y 5/1) clay loam; moderate coarse prismatic structure parting to moderate medium and coarse angular blocky; very firm; few fine roots; common medium prominent dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; neutral; clear smooth boundary.

Bg3—42 to 50 inches; dark gray (5Y 4/1) silty clay loam; moderate coarse prismatic structure parting to moderate coarse subangular and angular blocky; firm; few fine roots; stratified with thin bands of clay loam; many medium prominent dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; neutral; clear wavy boundary.

Cg—50 to 60 inches; gray (5Y 5/1) clay loam; massive; firm; few fine roots; stratified with bands of fine sandy loam, silty clay loam, and silty clay; many coarse prominent yellowish brown (10YR 5/4 and 5/8) masses that have accumulated iron oxide and are in the matrix; neutral.

### Range in Characteristics

*Depth to the base of the cambic horizon:* 36 to 60 inches

*Thickness of the mollic epipedon:* 10 to 24 inches

*Particle-size control section:* 35 to 42 percent clay

*Reaction:* The series control section dominantly is slightly acid or neutral but ranges to moderately acid in the upper part and to moderately alkaline in the lower part.

*Carbonates:* In the lower one-quarter of the series control section in some pedons

*Content of rock fragments:* 0 to 5 percent throughout the series control section

*A, Ap, or AB horizon:*

Hue—10YR to 5Y, or N

Value—2, 2.5, or 3

Chroma—0 to 2

Texture—silty clay loam

*Bg, Btg, or BCg horizon:*

Hue—2.5Y or 5Y; less commonly 10YR or N

Value—4 to 6

Chroma—0 to 2

Texture—silty clay loam or silty clay in the upper part; stratified clay loam or silty clay loam in the lower part; thin strata that ranges from clay to fine sandy loam in some pedons

*Cg horizon:*

Hue—2.5Y or 5Y; less commonly 10YR or N

Value—4 to 6

Chroma—0 to 2

Texture—clay loam or silty clay loam; thin layers ranging from sandy loam to clay

### Mishawaka Series

*Taxonomic classification:* Sandy, mixed, mesic Typic Hapludolls

#### Typical Pedon for the Series

Mishawaka sandy loam, on a slope of less than 1 percent, in a cultivated field at an elevation of 775 feet; Elkhart County, Indiana; about 0.5 mile southeast of Bristol; 1,590 feet east and 2,490 feet north of the southwest corner of sec. 26, T. 38 N., R. 6 E.; lat. 41 degrees 42 minutes 00 seconds N. and long. 85 degrees 48 minutes 15 seconds W., NAD 27; UTM Zone 16, 599500 Easting and 4617165 Northing, NAD 83.

Ap—0 to 12 inches; very dark brown (10YR 2/2) sandy loam, very dark grayish brown (10YR 3/2) dry; weak fine granular structure; very friable; common

fine and medium roots throughout; slightly acid; abrupt smooth boundary.

Bt1—12 to 18 inches; dark brown (7.5YR 3/3) sandy loam, brown (10YR 4/3) dry; moderate medium subangular blocky structure; very friable; many medium and coarse and common fine roots throughout; few faint very dark grayish brown (10YR 3/2) clay films on faces of peds and bridges between sand grains and gravel; 14 percent gravel; strongly acid; clear wavy boundary.

Bt2—18 to 25 inches; brown (7.5YR 4/3) gravelly loamy sand; weak fine subangular blocky structure; very friable; many medium and coarse and common fine roots throughout; few faint dark brown (10YR 3/3) clay films on faces of peds and bridges between sand grains and gravel; 31 percent gravel; strongly acid; clear wavy boundary.

BC—25 to 32 inches; dark yellowish brown (10YR 4/4) sand; weak fine subangular blocky structure; very friable; many coarse and common medium roots throughout; 1 percent gravel; strongly acid; gradual wavy boundary.

CB—32 to 58 inches; yellowish brown (10YR 5/4) sand; single grain; loose; common coarse to fine roots throughout; strongly acid; gradual wavy boundary.

C1—58 to 70 inches; brown (10YR 5/3) sand; single grain; loose; common coarse to fine roots throughout; 3 percent gravel; strongly acid; gradual wavy boundary.

C2—70 to 80 inches; brown (10YR 5/3) coarse sand; single grain; loose; common coarse to fine roots throughout; 5 percent gravel; strongly acid.

### Range in Characteristics

*Thickness of the solum:* 40 to 70 inches

*Thickness of the mollic epipedon:* 10 to 20 inches

*Ap horizon:*

Hue—7.5YR or 10YR

Value—2, 2.5, or 3

Chroma—1 to 3

Texture—sandy loam

Reaction—strongly acid to neutral

Content of rock fragments—0 to 14 percent gravel

*Bt horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—3 or 4

Texture—sandy loam or loamy sand or the gravelly analogs of these textures

Reaction—strongly acid or moderately acid

Content of rock fragments—0 to 34 percent gravel



*BC or CB horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—4 or 5

Texture—sand or fine sand

Reaction—strongly acid or moderately acid

Content of rock fragments—0 to 14 percent gravel

*C horizon:*

Hue—10YR

Value—5

Chroma—3 or 4

Texture—sand or coarse sand

Reaction—strongly acid or moderately acid

Content of rock fragments—0 to 14 percent gravel

**Moon Series**

*Taxonomic classification:* Fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs

**Typical Pedon for the Series**

Moon loamy sand, on a slope of 3 percent, in a cultivated field at an elevation of 731 feet; Pulaski County, Indiana; about 4.5 miles south of Monterey; 1,912 feet east and 1,595 feet south of the northwest corner of sec. 36, T. 31 N., R. 1 W.; USGS Kewanna, Indiana, topographic quadrangle; lat. 41 degrees 05 minutes 39.4 seconds N. and long. 86 degrees 28 minutes 41.3 seconds W., NAD 27; UTM Zone 16, 543826 Easting and 4549360 Northing, NAD 83.

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loamy sand, grayish brown (10YR 5/2) dry; weak fine granular structure; friable; many medium and common fine and very fine roots throughout; 5 percent gravel; neutral; abrupt smooth boundary.

E1—9 to 17 inches; dark yellowish brown (10YR 4/4) loamy sand; weak medium subangular blocky structure; friable; common medium roots throughout; 9 percent gravel; neutral; clear wavy boundary.

E2—17 to 23 inches; yellowish brown (10YR 5/4) sand; weak medium subangular blocky structure; friable; common medium roots throughout; common medium faint dark yellowish brown (10YR 4/4) masses that have accumulated iron oxide and are in the matrix; 12 percent gravel; neutral; clear wavy boundary.

2Bt1—23 to 31 inches; brown (10YR 4/3) sandy clay loam; moderate medium subangular blocky structure; firm; common medium roots between pedis; common faint brown (10YR 4/3) clay films on faces of pedis and in pores; common fine distinct yellowish brown (10YR 5/6) masses that

have accumulated iron oxide and are in the matrix; 14 percent gravel; neutral; clear wavy boundary.

2Bt2—31 to 35 inches; yellowish brown (10YR 5/4) sandy clay loam; moderate medium subangular blocky structure; firm; common medium roots between pedis; many distinct dark grayish brown (10YR 4/2) clay films on faces of pedis and in pores; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; few prominent black (N 2.5/0) masses in which iron and manganese oxide have accumulated; common fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; 6 percent gravel; neutral; clear wavy boundary.

2Bt3—35 to 45 inches; brown (10YR 5/3) loam; moderate medium subangular blocky structure; firm; few medium roots between pedis; many distinct dark grayish brown (10YR 4/2) clay films on faces of pedis and in pores; many medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; 6 percent gravel; neutral; clear wavy boundary.

2BCtk—45 to 57 inches; brown (10YR 5/3) loam; weak coarse prismatic structure; firm; few medium roots between pedis; common faint dark grayish brown (10YR 4/2) clay films on faces of pedis and in pores; light gray (10YR 7/2) masses of carbonate on vertical faces of pedis; many medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; 7 percent gravel; slightly effervescent; slightly alkaline; clear wavy boundary.

2C—57 to 80 inches; yellowish brown (10YR 5/4) loam; massive; firm; common fine distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; 8 percent gravel; strongly effervescent; slightly alkaline.

**Range in Characteristics**

*Depth to the base of the argillic horizon:* 40 to 60 inches

*Depth to carbonates:* 40 to 60 inches

*Depth to redoximorphic depletions with chroma of 2 or less:* 30 to 40 inches

*Thickness of the sandy material:* 20 to 40 inches

*Ap or A horizon:*

Hue—10YR

Value—3 to 5  
 Chroma—2 to 4  
 Texture—loamy sand  
 Reaction—moderately acid to neutral  
 Content of rock fragments—0 to 14 percent gravel

*E horizon:*

Hue—10YR  
 Value—4 or 5  
 Chroma—4 to 6  
 Texture—loamy sand, loamy fine sand, fine sand, or sand  
 Reaction—very strongly acid to neutral  
 Content of rock fragments—0 to 14 percent gravel

*2Bt horizon:*

Hue—10YR  
 Value—4 or 5  
 Chroma—3 to 6  
 Texture—sandy loam, sandy clay loam, clay loam, or loam  
 Reaction—strongly acid to neutral  
 Content of rock fragments—0 to 14 percent gravel

*2BCtk horizon:*

Hue—10YR  
 Value—4 or 5  
 Chroma—3 to 6  
 Texture—fine sandy loam or loam  
 Reaction—slightly acid to slightly alkaline  
 Content of rock fragments—0 to 10 percent gravel

*2C horizon:*

Hue—10YR  
 Value—5 or 6  
 Chroma—3 to 8  
 Texture—fine sandy loam or loam  
 Reaction—slightly alkaline or moderately alkaline  
 Content of rock fragments—0 to 10 percent gravel

## **Morley Series**

*Taxonomic classification:* Fine, illitic, mesic Oxyaquic Hapludalfs

### **Typical Pedon for the Series**

Morley silty clay loam, on a convex slope of 9 percent, in a cultivated field at an elevation of 850 feet; Adams County, Indiana; about 2.25 miles southeast of Berne; 1,580 feet west and 1,360 feet south of the northeast corner of sec. 15, T. 25 N., R. 14 E.; USGS Berne, Indiana, topographic quadrangle; lat. 40 degrees 37 minutes 16 seconds N. and long. 84 degrees 55 minutes 24 seconds W., NAD 27; UTM Zone 16, 675653 Easting and 4498771 Northing, NAD 83.

Ap—0 to 9 inches; 80 percent dark grayish brown (10YR 4/2) and 20 percent dark yellowish brown (10YR 4/4) silty clay loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; common fine roots; 1 percent gravel; moderately acid; abrupt smooth boundary.

Bt1—9 to 17 inches; dark yellowish brown (10YR 4/4) clay; weak coarse prismatic structure parting to moderate medium subangular blocky; very firm; common fine roots; many distinct brown (10YR 4/3) clay films on faces of peds; few distinct grayish brown (10YR 5/2) silt coatings on faces of peds; 1 percent gravel; very strongly acid; clear smooth boundary.

Bt2—17 to 20 inches; dark yellowish brown (10YR 4/4) clay; weak coarse prismatic structure parting to moderate medium subangular blocky; very firm; common fine roots; many distinct brown (10YR 4/3) clay films on faces of peds; 2 percent gravel; neutral; clear wavy boundary.

Bt3—20 to 29 inches; yellowish brown (10YR 5/4) clay loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; few medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; 5 percent gravel; strongly effervescent; slightly alkaline; clear wavy boundary.

Cd1—29 to 36 inches; yellowish brown (10YR 5/4) clay loam; weak very coarse prismatic structure parting to weak very thick platy; very firm; very few distinct dark grayish brown (10YR 4/2) clay films and common distinct light gray (10YR 7/2) carbonate coatings on vertical faces of cracks; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; 9 percent gravel; strongly effervescent; moderately alkaline.

Cd2—36 to 80 inches; yellowish brown (10YR 5/4) clay loam; weak very coarse prismatic structure; very firm; few distinct light gray (10YR 7/2) carbonate coatings on vertical faces of cracks; common medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; 9 percent gravel; strongly effervescent; moderately alkaline.

### **Range in Characteristics**

*Depth to the base of the argillic horizon:* 20 to 40 inches

*Depth to carbonates:* 20 to 40 inches

*Thickness of the loess:* 0 to 18 inches

*Particle-size control section:* 35 to 50 percent clay, 15 to 25 percent sand, and 1 to 5 percent rock fragments

*Ap horizon:*

Hue—10YR  
 Value—4  
 Chroma—2 or 3  
 Texture—silt loam or silty clay loam  
 Reaction—strongly acid to neutral

*A horizon (where present):*

Hue—10YR  
 Value—2 or 3  
 Chroma—1 or 2  
 Texture—silt loam or silty clay loam  
 Reaction—strongly acid to neutral  
 Thickness of the horizon—less than 6 inches

*Bt horizon:*

Hue—10YR  
 Value—4 or 5  
 Chroma—3 to 6  
 Texture—clay loam or clay; less commonly silty clay loam or silty clay  
 Reaction—very strongly acid to slightly alkaline  
 Content of rock fragments—1 to 10 percent

*Cd horizon:*

Hue—10YR  
 Value—5  
 Chroma—3 or 4  
 Texture—clay loam; less commonly silty clay loam  
 Reaction—slightly acid to moderately alkaline  
 Content of rock fragments—1 to 10 percent

**Morocco Series**

*Taxonomic classification:* Mixed, mesic Aquic Udipsamments

**Typical Pedon for the Series**

Morocco loamy fine sand, on a slope of 0.5 percent, in a cultivated field at an elevation of 687 feet; Jasper County, Indiana; 4 miles southwest of Demotte; 270 feet north and 950 feet west of the southeast corner of sec. 7, T. 31 N., R. 7 W.; USGS Shelby, Indiana, topographic quadrangle; lat. 41 degrees 08 minutes 43.6 seconds N. and long. 87 degrees 15 minutes 35.9 seconds W., NAD 27; UTM Zone 16, 478181 Easting and 4554938 Northing, NAD 83.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loamy fine sand, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; common fine and very fine roots; very strongly acid; abrupt smooth boundary.

Bw1—9 to 14 inches; light yellowish brown (10YR 6/4) loamy fine sand; single grain; loose; few very fine

roots; few fine prominent strong brown (7.5YR 5/8) masses that have accumulated iron oxide and are in the matrix; common medium distinct light gray (10YR 7/2) iron depletions in the matrix; very strongly acid; clear wavy boundary.

Bw2—14 to 22 inches; very pale brown (10YR 7/3) loamy fine sand; single grain; loose; few very fine roots; common medium prominent brownish yellow (10YR 6/8) masses that have accumulated iron oxide and are in the matrix; very strongly acid; clear wavy boundary.

Bg—22 to 35 inches; light gray (10YR 7/2) fine sand; single grain; loose; many coarse prominent yellowish red (5YR 5/8) masses that have accumulated iron oxide and are in the matrix; very strongly acid; clear wavy boundary.

B'w1—35 to 50 inches; very pale brown (10YR 7/4) fine sand; single grain; loose; common medium prominent brownish yellow (10YR 6/8) masses that have accumulated iron oxide and are in the matrix; common medium distinct light gray (10YR 7/2) iron depletions in the matrix; very strongly acid; gradual wavy boundary

B'w2—50 to 60 inches; very pale brown (10YR 7/4) fine sand; single grain; loose; common medium prominent brownish yellow (10YR 6/8) masses that have accumulated iron and are in the matrix; common medium distinct light gray (10YR 7/2) iron depletions in the matrix; strongly acid; clear wavy boundary.

C—60 to 80 inches; pale brown (10YR 6/3) sand; single grain; loose; common medium distinct brownish yellow (10YR 6/6) masses that have accumulated iron oxide and are in the matrix; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; strongly acid.

**Range in Characteristics**

*Thickness of the solum:* 24 to 80 inches

*Depth to iron depletions:* Within a depth of 24 inches

*Ap or A horizon:*

Hue—10YR  
 Value—2 to 6, 6 or more dry where the Ap or A horizon is 6 inches or more thick  
 Chroma—1 to 4  
 Texture—loamy fine sand or loamy sand  
 Reaction—very strongly acid to neutral depending on liming history  
 Content of rock fragments—0 to 1 percent gravel

*E horizon (where present):*

Hue—10YR  
 Value—4 to 6  
 Chroma—3 or 4

Texture—loamy fine sand, fine sand, loamy sand, or sand

Reaction—very strongly acid to neutral depending on liming history

Content of rock fragments—0 to 1 percent gravel

*Bw or Bg horizon:*

Hue—5YR to 2.5Y

Value—4 to 7

Chroma—1 to 8

Texture—fine sand, sand, loamy fine sand, or loamy sand

Reaction—very strongly acid to moderately acid

Content of rock fragments—0 to 5 percent gravel

*C horizon:*

Hue—2.5YR to 10YR

Value—5 to 8

Chroma—1 to 4

Texture—fine sand or sand

Reaction—very strongly acid to moderately acid

Content of rock fragments—0 to 7 percent gravel

## **Moston Series**

*Taxonomic classification:* Coprogenous, euic, mesic  
Limnic Haplosaprists

### **Typical Pedon for the Series**

Moston muck, on a slope of less than 1 percent, in a cultivated field at an elevation of 714 feet; Pulaski County, Indiana; about 2 miles west of Monterey; 1,590 feet east and 1,750 feet south of the northwest corner of sec. 9, T. 31 N., R. 1 W.; USGS Bass Lake, Indiana, topographic quadrangle; lat. 41 degrees 09 minutes 07.9 seconds N. and long. 86 degrees 32 minutes 18.9 seconds W., NAD 27; UTM Zone 16, 538716 Easting and 4555757 Northing, NAD 83.

Oap—0 to 8 inches; muck (sapric material), black (N 2.5/0) broken faced and rubbed; a trace of fiber unrubbed and rubbed; moderate medium granular structure; friable; common very fine and fine roots; moderately acid; abrupt smooth boundary.

Oa1—8 to 15 inches; muck (sapric material), black (N 2.5/0) broken faced and rubbed; a trace of fiber unrubbed and rubbed; weak medium subangular blocky structure; friable; common very fine and fine roots; strongly acid; clear wavy boundary.

Oa2—15 to 24 inches; muck (sapric material), dark brown (10YR 3/3) broken faced and rubbed; about 50 percent fiber, about 5 percent rubbed; moderate thick platy structure; friable; common

very fine and fine roots; neutral; clear wavy boundary.

Lco1—24 to 30 inches; very dark gray (10YR 3/1) coprogenous silt loam; about 5 percent fiber, a trace rubbed; massive; friable; neutral; clear wavy boundary.

Lco2—30 to 48 inches; very dark grayish brown (2.5Y 3/2) coprogenous silt loam; about 15 percent fiber, a trace rubbed; massive; friable; neutral; clear wavy boundary.

Cg—48 to 80 inches; gray (2.5Y 5/1) sand; single grain; loose; slightly effervescent; slightly alkaline.

### **Range in Characteristics**

*Thickness of the herbaceous organic layers:* 16 to 45 inches

*Depth to coprogenous material (sedimentary peat):* 16 to 45 inches

*Organic fibers:* Derived primarily from herbaceous plants, although some pedons contain less than 15 percent, by volume, twigs and small wood fragments.

*Depth to the underlying sand:* 21 to 51 inches

*Oap horizon:*

Hue—10YR or N

Value—2, 2.5, or 3

Chroma—0 to 2

Texture—muck (sapric material)

Reaction—very strongly acid to neutral

*Oa horizon:*

Hue—7.5YR or 10YR, or N

Value—2, 2.5, or 3

Chroma—0 to 3

Texture—muck (sapric material)

Reaction—very strongly acid to neutral

*Lco horizon:*

Hue—10YR to 5Y

Value—2 to 5

Chroma—1 to 3

Texture—coprogenous silt loam or coprogenous silty clay loam

Reaction—moderately acid to slightly alkaline

*Cg horizon:*

Hue—10YR or 2.5Y

Value—3 to 6

Chroma—1 or 2

Texture—loamy sand, fine sand, sand, or coarse sand or the gravelly analogs of these textures

Reaction—neutral to moderately alkaline

Content of rock fragments—0 to 25 percent



## Muskego Series

*Taxonomic classification:* Coprogenous, euic, mesic  
Limnic Haplosaprists

### Typical Pedon for MLRA 111

Muskego muck, 0 to 1 percent slopes, drained, in a cultivated field at an elevation of 791 feet; Elkhart County, Indiana; about 2.5 miles south and 2 miles east of Jamestown, Indiana; 2,507 feet south and 275 feet west of the northeast corner of sec. 6, T. 36 N., R. 5 E., USGS Foraker, Indiana, topographic quadrangle; lat. 41 degrees 36 minutes 07 seconds N. and long. 85 degrees 59 minutes 05 seconds W., NAD 27; UTM Zone 16, 584605 Easting and 4606086 Northing, NAD 83.

Oap—0 to 9 inches; muck (sapric material), black (N 2.5/0) broken face and rubbed; about 5 percent fiber, less than 1 percent rubbed; moderate fine granular structure; very friable; many very fine and fine roots throughout; slightly acid; abrupt smooth boundary.

Oa1—9 to 21 inches; muck (sapric material), brown (7.5YR 4/4) broken face, black (N 2.5/0) after exposure to air; about 5 percent fiber, less than 1 percent rubbed; moderate thin platy structure; very firm; common very fine and fine roots between peds; slightly acid; clear smooth boundary.

Oa2—21 to 27 inches; muck (sapric material), dark gray (10YR 4/1) broken face, black (N 2.5/0) after exposure to air; about 15 percent fiber, 2 percent rubbed; weak thin platy structure; friable; common very fine and fine roots between peds; slightly acid; clear smooth boundary.

Lco1—27 to 35 inches; dark grayish brown (2.5Y 4/2) coprogenous material; about 5 percent fiber, 5 percent rubbed; massive; very friable; neutral; clear smooth boundary.

Lco2—35 to 54 inches; dark grayish brown (2.5Y 4/2) coprogenous material; massive; very friable; neutral; clear smooth boundary.

Lco3—54 to 70 inches; coprogenous material, olive gray (5Y 4/2), dark gray (5Y 4/1) after exposure to air; massive; very friable; neutral; clear smooth boundary.

Lco4—70 to 80 inches; dark gray (5Y 4/1) coprogenous material; massive; very friable; neutral.

### Range in Characteristics

*Thickness of the herbaceous organic layers:* 16 to 51 inches

*Depth to coprogenous material (sedimentary peat):* 16 to 51 inches

*Organic fibers:* Derived primarily from herbaceous plants; some pedons contain fragments of twigs, branches, or logs that range from 1/8 inch to 5 inches in diameter and amount to less than 15 percent of the volume.

*Surface tier of the Oap or Oa horizon:*

Hue—7.5YR or 10YR, or N

Value—2, 2.5, or 3

Chroma—0 to 2

Texture—muck (sapric material)

Reaction—moderately acid to neutral (water, 1:1)

*Herbaceous organic subsurface and bottom tiers of the Oa horizon:*

Hue—7.5YR or 10YR, or N

Value—2, 2.5, or 3

Chroma—0 to 3

Texture—muck (sapric material); some pedons have layers of mucky peat (hemic material) up to 10 inches thick

Reaction—moderately acid to slightly alkaline (water, 1:1)

*Lco horizon:*

Hue—10YR to 5Y

Value—2 to 5

Chroma—1 to 3

Texture—coprogenous material

Reaction—neutral to moderately alkaline

## Oshtemo Series

*Taxonomic classification:* Coarse-loamy, mixed, active, mesic Typic Hapludalfs

### Typical Pedon for the Series

Oshtemo sandy loam (fig. 27), on a slope of 1 percent, in a cultivated field at an elevation of 837 feet; St. Joseph County, Michigan; about 1 mile north of Centreville; 800 feet north and 880 feet east of the southwest corner of sec. 18, T. 6 S., R. 10 W.; USGS Nottawa, Michigan, topographic quadrangle; lat. 41 degrees 56 minutes 34.2 seconds N. and long. 85 degrees 31 minutes 28.3 seconds W., NAD 27; UTM Zone 16, 622305 Easting and 4644488 Northing, NAD 83.

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) sandy loam, light brownish gray (10YR 6/2) dry; weak coarse granular structure; very friable; slightly acid; abrupt smooth boundary.

E—9 to 14 inches; brown (10YR 5/3) sandy loam, light brownish gray (10YR 6/2) dry; weak fine subangular blocky structure; very friable; many worm and root channels filled with Ap material;

about 3 percent fine gravel; moderately acid; clear wavy boundary.

Bt1—14 to 26 inches; dark reddish brown (5YR 3/4) sandy loam, brown (7.5YR 4/4) dry; weak coarse subangular blocky structure; friable; common faint clay films on faces of peds; about 8 percent gravel; strongly acid; clear wavy boundary.

Bt2—26 to 35 inches; brown (7.5YR 4/4) sandy loam; weak coarse subangular blocky structure; friable; common faint clay films on faces of peds; some clay bridges between sand grains and gravel; few dark brown (7.5YR 3/2) masses 1 to 3 inches in diameter; about 5 percent gravel; strongly acid; gradual wavy boundary.

BC1—35 to 46 inches; brown (7.5YR 4/4) loamy sand; single grain; loose; many dark brown (7.5YR 3/2) spots and masses up to 2 inches in diameter; about 5 percent gravel; moderately acid; diffuse irregular boundary.

BC2—46 to 60 inches; brown (7.5YR 4/4) loamy sand; single grain; loose; dark brown (7.5YR 3/2) bands 1/8 inch thick; most sand grains have dark brown (7.5YR 3/2) coatings; moderately acid; abrupt irregular boundary.

C—60 to 80 inches; grayish brown (10YR 5/2) stratified sand and gravelly sand; single grain; loose; about 20 percent gravel; few faint carbonate coatings on lower side of gravel; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 20 to 45 inches

*Thickness of the solum:* 40 to 75 inches

*Depth to carbonates:* 40 to 70 inches

#### *Ap horizon:*

Hue—7.5YR or 10YR

Value—3 to 5, 6 or more dry

Chroma—2 or 3

Texture—sandy loam or fine sandy loam

Reaction—strongly acid to neutral

Content of rock fragments—1 to 14 percent

#### *E horizon:*

Hue—10YR

Value—5 or 6

Chroma—3 to 6, moist or dry

Texture—loam, sandy loam, fine sandy loam, loamy sand, or loamy fine sand

Reaction—strongly acid to neutral

Content of rock fragments—1 to 14 percent

#### *Bt horizon:*

Hue—5YR to 10YR

Value—3 to 5

Chroma—3 to 6

Texture—sandy loam, gravelly sandy loam, sandy clay loam, gravelly coarse sandy loam, gravelly sandy clay loam, or fine sandy loam; the lower part is in bands 1/8 inch to 4 inches thick separated by sand or loamy sand in some pedons; the lower part is coarse sandy loam or gravelly coarse sandy loam in some pedons

Reaction—strongly acid to slightly acid in the upper part; strongly acid to neutral in the lower part

Content of rock fragments—1 to 30 percent

#### *BC horizon:*

Hue—5YR to 10YR

Value—3 to 5

Chroma—2 to 6

Texture—loamy sand, sandy loam, gravelly loamy sand, or gravelly sandy loam

Reaction—strongly acid to neutral

Content of rock fragments—1 to 30 percent

#### *C horizon:*

Hue—10YR

Value—4 to 6

Chroma—2 to 6

Texture—stratified sand, coarse sand, loamy sand, or loamy coarse sand or the gravelly or very gravelly analogs of these textures

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—10 to 50 percent

## Osolo Series

*Taxonomic classification:* Mixed, mesic Typic Udipsamments

### Typical Pedon for the Series

Osolo loamy sand, on a slope of 0.5 percent, in a cultivated field at an elevation of 776 feet; Elkhart County, Indiana; 0.25 mile east of Heaton Lake; 2,583 feet west and 1,666 feet south of the northeast corner of sec. 24, T. 38 N., R. 5 E.; USGS Elkhart, Indiana, topographic quadrangle; lat. 41 degrees 44 minutes 04 seconds N. and long. 85 degrees 53 minutes 23 seconds W., NAD 27; UTM Zone 16, 592332 Easting and 4620894 Northing, NAD 83.

Ap—0 to 9 inches; dark brown (10YR 3/3) loamy sand, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; common very fine and fine roots; slightly acid; 1 percent gravel; abrupt smooth boundary.

Bw1—9 to 15 inches; brown (7.5YR 4/4) loamy sand; weak fine subangular blocky structure; very friable;

few very fine and fine roots; slightly acid; 1 percent gravel; clear wavy boundary.

Bw2—15 to 20 inches; brown (7.5YR 4/4) loamy sand; weak fine subangular blocky structure; very friable; few very fine and fine roots; neutral; 1 percent gravel; clear wavy boundary.

Bw3—20 to 25 inches; brown (7.5YR 4/4) loamy sand; weak fine subangular blocky structure; very friable; few very fine and fine roots; slightly acid; 2 percent gravel; clear wavy boundary.

Bw4—25 to 29 inches; brown (7.5YR 4/4) sand; single grain; loose; slightly acid; clear wavy boundary.

Bw5—29 to 40 inches; dark yellowish brown (10YR 4/6) sand; single grain; loose; slightly acid; clear wavy boundary.

BC1—40 to 48 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; few medium faint pale brown (10YR 6/3) iron depletions in the matrix; slightly acid; clear wavy boundary.

BC2—48 to 66 inches; light yellowish brown (10YR 6/4) fine sand; single grain; loose; many medium distinct strong brown (7.5YR 4/6) masses that have accumulated iron oxide and are in the matrix; many medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; slightly acid; clear wavy boundary.

CB—66 to 80 inches; yellowish brown (10YR 5/4) fine sand; single grain; loose; many medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; slightly acid.

### Range in Characteristics

*Thickness of the solum:* 60 to more than 80 inches

*Depth to sand or fine sand:* 20 to 50 inches

*Depth to redoximorphic features:* 40 to 72 inches

*Reaction:* Strongly acid to neutral throughout the series control section

*Rock fragment content:* 0 to 10 percent gravel throughout the series control section

*Particle-size control section:* silt content plus clay content averages more than 10 percent; fine sand content averages less than 50 percent.

#### *Ap horizon:*

Hue—10YR

Value—3 or 4

Chroma—2 to 4

Texture—loamy sand

#### *A horizon (where present):*

Hue—10YR

Value—3

Chroma—1 to 3

Texture—loamy sand

#### *Bw horizon:*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—4 to 6

Texture—loamy sand in the upper part; sand or fine sand in the lower part

#### *BC, CB, or C horizon:*

Hue—10YR

Value—4 to 6

Chroma—3 to 6

Texture—sand or fine sand

## Palms Series

*Taxonomic classification:* Loamy, mixed, euic, mesic  
Terric Haplosaprists

### Typical Pedon for the Series

Palms muck, on a slope of 1 percent, under marsh vegetation at an elevation of 648 feet; Gratiot County, Michigan; north of the flood plain of the Maple River and about 200 feet south of the upland; 1,420 feet south and 820 feet west of northeast corner of sec. 27, T. 9 N., R. 2 W.; USGS Pompeli, Michigan, topographic quadrangle; lat. 43 degrees 08 minutes 31.3 seconds N. and long. 84 degrees 31 minutes 34.7 seconds W., NAD 27; UTM Zone 16, 701165 Easting and 4779557 Northing, NAD 83.

Oa1—0 to 14 inches; muck (sapric material), black (10YR 2/1) broken face and rubbed; about 5 percent fiber, less than 5 percent rubbed; moderate medium granular structure; slightly sticky; about 20 to 25 percent mineral material; slightly acid (pH 6.5 in water); abrupt smooth boundary.

Oa2—14 to 28 inches; muck (sapric material), black (10YR 2/1) broken face and rubbed; about 5 percent fiber, less than 5 percent rubbed; massive parting to weak coarse subangular blocky structure; slightly sticky; 10 to 20 percent mineral material; strongly acid (pH 5.5 in water); clear smooth boundary.

Oa3—28 to 35 inches; muck (sapric material), black (N 2.5/0) rubbed; about 5 percent fiber, less than 5 percent rubbed; massive; slightly sticky; 10 to 20 percent mineral material; moderately acid (pH 6.0 in water); abrupt smooth boundary.

Cg—35 to 80 inches; gray (10YR 5/1) clay loam; massive; friable; common medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron oxide and are in the matrix; neutral (pH 6.8 in water) in upper part; slightly

effervescent; moderately alkaline in lower part of the horizon.

### Range in Characteristics

*Depth to the loamy C horizon:* 16 to 51 inches

*Organic fibers:* Derived primarily from herbaceous plants but some layers contain as much as 15 percent woody material.

*Reaction of the organic material:* Strongly acid to slightly alkaline

*Carbonates:* Present in some organic layers

*Other features:* Some pedons have a thin layer of sedimentary peat above the C horizon; some pedons have a thin A horizon above the C horizon.

*Surface tier of the Oa1 horizon:*

Hue—5YR to 10YR, or N

Value—2, 2.5, or 3

Chroma—0 to 2

Texture—muck (sapric material)

*Subsurface and bottom tiers of the Oa horizon:*

Hue—5YR to 10YR, or N

Value—2 to 4

Chroma—0 to 3

Texture—muck (sapric material); thin layers of hemic material less than 10 inches thick in some pedons; thin layers of fibric material less than 5 inches thick in some pedons

*C or Cg horizon:*

Hue—10YR to 5Y, 5GY, or N

Value—3 to 7

Chroma—0 to 4

Texture—loamy very fine sand, sandy loam, fine sandy loam, loam, silt loam, silty clay loam, clay loam, or sandy clay loam or the gravelly analogs of these textures; thin strata of fine sand, loamy sand, or silt in some pedons

Reaction—moderately acid to moderately alkaline

Content of rock fragments—0 to 25 percent gravel to stones

### Quinn Series

*Taxonomic classification:* Coarse-loamy, mixed, active, mesic Typic Endoaqualls

### Typical Pedon for the Series

Quinn loam, on a slope of less than 1 percent, in a forested area at an elevation of 728 feet; St. Joseph County, Indiana; about 3.5 miles southeast of New Carlisle along Edison Road; 380 feet west and 240 feet south of northeast corner of sec. 5, T. 37 N., R. 1 E.; USGS Lydick, Indiana, topographic quadrangle; lat. 41 degrees 41 minutes 35.3 seconds N. and long. 86 degrees 25 minutes

46.56 seconds W., NAD 27; UTM Zone 16, 547464 Easting and 4615870 Northing, NAD 83.

A—0 to 4 inches; very dark gray (10YR 3/1) loam, gray (10YR 5/1) dry; weak fine granular structure; friable; very strongly acid; abrupt smooth boundary.

E—4 to 7 inches; gray (10YR 6/1) loam; weak thick platy structure; friable; very dark gray (10YR 3/1) wormcasts and fills in old root channels; common iron and manganese oxide concretions; very strongly acid; abrupt smooth boundary.

Btg1—7 to 12 inches; gray (10YR 5/1) loam; weak medium subangular blocky structure; friable; common faint dark gray (10YR 4/1) clay films on faces of peds and as linings in pores; many medium prominent brown (7.5YR 4/4) masses that have accumulated iron oxide and are in the matrix; common iron and manganese oxide concretions; very strongly acid; clear wavy boundary.

Btg2—12 to 19 inches; gray (10YR 6/1) sandy loam; weak medium subangular blocky structure; friable; common distinct grayish brown (10YR 5/2) clay films in old root channels, as linings in pores, and on faces of peds; common medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron oxide and are in the matrix; many medium iron and manganese oxide concretions; very strongly acid; clear wavy boundary.

Btg3—19 to 27 inches; gray (10YR 5/1) sandy loam; weak coarse prismatic structure parting to moderate coarse subangular blocky; firm; common distinct silt coatings on faces of peds and as linings in pores; many medium prominent strong brown (7.5YR 5/6) masses that have accumulated iron oxide and are in the matrix; many medium iron and manganese oxide concretions; few gravel and shale fragments (5 to 10 percent); very strongly acid; clear irregular boundary.

Btg4—27 to 42 inches; gray (10YR 5/1) sandy loam; weak coarse prismatic structure; friable; pockets of loamy sand; common faint gray (10YR 5/1) clay films as linings in pores; many medium distinct yellowish brown (10YR 5/4) and prominent strong brown (7.5YR 5/6) masses that have accumulated iron oxide and are in the matrix; many medium iron and manganese oxide concretions; few gravel and fine shale fragments; very strongly acid; clear wavy boundary.

Btg5—42 to 47 inches; gray (10YR 5/1) loam; weak coarse subangular blocky structure; friable; common faint gray (10YR 5/1) clay films as linings in pores and on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses



that have accumulated iron oxide and are in the matrix; common iron and manganese oxide concretions; few gravel and fine shale fragments (5 to 10 percent); strongly acid; clear broken boundary.

Cg—47 to 72 inches; grayish brown (10YR 5/2) loamy sand and sand; single grain; loose; many medium distinct yellowish brown (10YR 5/4) masses that have accumulated iron oxide and are in the matrix; 5 to 20 percent gravel and shale fragments; slightly acid; clear wavy boundary.

C—72 to 80 inches; yellowish brown (10YR 5/4) sand and gravelly sand; single grain; loose; many medium distinct grayish brown (10YR 5/2) iron depletions in the matrix; 5 to 20 percent gravel and shale fragments; slightly acid.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 40 to 60 inches

*Reaction:* Typically very strongly or strongly acid in the solum but individual horizons in some pedons are moderately acid

#### *A horizon:*

Hue—10YR

Value—3 or 4

Chroma—1

Texture—loam or sandy loam

#### *Ap horizon (where present):*

Hue—10YR

Value—4 or 5

Chroma—1 or 2

Texture—loam or sandy loam

Thickness of the horizon—6 to 10 inches

#### *E horizon:*

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—1 or 2

Texture—loam, sandy loam, or silt loam

#### *Upper part of the Btg horizon:*

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—1 or 2

Texture—loam or sandy loam; clay loam or sandy clay loam in some pedons

Content of rock fragments—0 to 14 percent

#### *Lower part of the Btg horizon:*

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—1 or 2

Texture—stratified sandy loam, loam, sandy clay

loam, or loamy sand or the gravelly analogs of these textures

Content of rock fragments—5 to 20 percent

#### *Cg or C horizon:*

Hue—10YR or 2.5Y

Value—5 or 6

Chroma—1 to 4

Texture—loamy sand or sand or the gravelly or very gravelly analogs of these textures

Content of rock fragments—5 to 30 percent; ranges to more than 40 percent in some pedons; dominantly shale

## **Rensselaer Series**

*Taxonomic classification:* Fine-loamy, mixed, superactive, mesic Typic Argiaquolls

### Typical Pedon for the Series

Rensselaer loam, on a concave slope of less than 1 percent, in a cultivated field at an elevation of 817 feet; Marshall County, Indiana; 3 miles east and 1.5 miles north of Bourbon; 1,150 feet east and 380 feet north of the southwest corner of sec. 9, T. 33 N., R. 4 E.; USGS Bourbon, Indiana, topographic quadrangle; lat. 41 degrees 19 minutes 07.5 seconds N. and long. 86 degrees 04 minutes 23.2 seconds W., NAD 27; UTM Zone 16, 577576 Easting and 4574562 Northing, NAD 83.

Ap—0 to 11 inches; very dark gray (10YR 3/1) loam, gray (10YR 5/1) dry; moderate fine granular structure; friable; common fine roots throughout; neutral; clear smooth boundary.

A—11 to 15 inches; very dark grayish brown (10YR 3/2) loam, grayish brown (10YR 5/2) dry; weak medium subangular blocky structure; friable; common fine roots throughout; common fine faint brown (10YR 4/3) masses that have accumulated iron oxide and are in the matrix; neutral; clear wavy boundary.

Btg1—15 to 26 inches; dark gray (10YR 4/1) clay loam; moderate medium subangular blocky structure; firm; few fine roots between peds; many distinct very dark gray (10YR 3/1) organo-clay films on faces of peds; few fine prominent yellowish red (5YR 5/8) masses that have accumulated iron oxide and are in the matrix; slightly acid; clear wavy boundary.

Btg2—26 to 38 inches; gray (10YR 6/1) clay loam; moderate medium subangular blocky structure; firm; few fine roots between peds; many distinct dark gray (10YR 4/1) clay films on faces of peds;

common medium prominent yellowish red (5YR 5/8) and strong brown (7.5YR 5/8) masses that have accumulated iron oxide and are in the matrix; neutral; clear wavy boundary.

Btg3—38 to 42 inches; gray (10YR 5/1) loam; moderate medium subangular blocky structure; friable; few fine and very fine roots between peds; common distinct dark gray (10YR 4/1) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; slightly effervescent; slightly alkaline; clear wavy boundary.

2Cg1—42 to 60 inches; gray (10YR 6/1) silt loam; massive; friable; thin strata of fine sand; few medium prominent brownish yellow (10YR 6/8) masses that have accumulated iron oxide and are in the matrix; 10 percent fine gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

2Cg2—60 to 76 inches; grayish brown (10YR 5/2) fine sand; single grain; loose; thin strata of loamy sand and sandy loam; massive; friable; common medium distinct yellowish brown (10YR 5/4) masses that have accumulated iron oxide and are in the matrix; 5 percent fine gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

3Cg3—76 to 80 inches; gray (10YR 5/1) loam; massive; friable; 5 percent fine gravel; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 40 to 60 inches

*Particle-size control section:* 20 to 35 percent clay; 25 to 35 percent fine sand or coarser

#### *Ap or A horizon:*

Hue—10YR or N

Value—2, 2.5, or 3

Chroma—0 to 2

Texture—loam or mucky loam

Reaction—slightly acid or neutral

Content of rock fragments—0 to 5 percent

#### *Btg horizon:*

Hue—10YR to 5Y, or N

Value—4 to 6

Chroma—0 to 2; some subhorizons have chroma of 3 or 4 in the lower part

Texture—clay loam, loam, or silty clay loam in the upper part; loam, sandy clay loam, clay loam, silt loam, sandy loam, or fine sandy loam in the lower part

Reaction—slightly acid or neutral in the upper part; neutral or slightly alkaline in the lower part

Content of rock fragments—0 to 5 percent

#### *2Cg horizon:*

Hue—10YR or 2.5Y, or N

Value—4 to 6

Chroma—0 to 2; some pedons have a 2C horizon with chroma of 3 in thin strata of sand

Texture—stratified fine sand, very fine sand, loamy sand, loamy fine sand, sandy loam, loam, or silt loam; strata of fine sand in all pedons and strata of coarse sand or sand 3 to 6 inches in thickness in some pedons

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—0 to 10 percent; dominantly fine and medium gravel

#### *3Cg horizon (where present):*

Hue—2.5YR, 10YR, or N

Value—4 to 6

Chroma—0 to 2

Texture—loam or fine sandy loam

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—1 to 10 percent

## Riddles Series

*Taxonomic classification:* Fine-loamy, mixed, active, mesic Typic Hapludalfs

### Typical Pedon for the Series

Riddles fine sandy loam, on a convex slope of 4 percent, in a cultivated field at an elevation of 902 feet; Elkhart County, Indiana; about 1 mile northeast of the community of Southwest, on the south side of Indiana Highway 119; 2,250 feet south and 500 feet east of the northwest corner of sec. 26, T. 36 N., R. 5 E.; USGS Foraker, Indiana, topographic quadrangle; lat. 41 degrees 32 minutes 39 seconds N. and long. 85 degrees 55 minutes 23 seconds W., NAD 27; UTM Zone 16, 589824 Easting and 4599733 Northing, NAD 83.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) fine sandy loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many fine and medium roots throughout; many very fine to medium interstitial and tubular pores; 7 percent gravel; slightly acid; abrupt wavy boundary.

Bt1—8 to 13 inches; brown (7.5YR 4/3) sandy clay loam; moderate fine and medium subangular blocky structure; firm; few fine and medium roots throughout; many fine interstitial and tubular pores; many faint brown (10YR 4/3) clay films on faces of

- pedes; common distinct brown (10YR 5/3) silt coatings on faces of pedes; 8 percent gravel; neutral; clear wavy boundary.
- Bt2—13 to 20 inches; brown (10YR 4/3) clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; few fine and medium roots throughout; many fine interstitial and tubular pores; many faint dark grayish brown (10YR 4/2) clay films on faces of pedes; common faint brown (10YR 5/3) silt coatings on faces of pedes; 3 percent gravel; slightly acid; clear wavy boundary.
- Bt3—20 to 33 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; few fine and medium roots throughout; many fine interstitial and tubular pores; many faint brown (10YR 4/3) clay films on faces of pedes; many faint brown (10YR 5/3) silt coatings on faces of pedes; common medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; 7 percent gravel; moderately acid; gradual wavy boundary.
- Bt4—33 to 46 inches; dark yellowish brown (10YR 4/4) fine sandy loam; moderate coarse subangular blocky structure; firm; few fine roots throughout; many fine interstitial and tubular pores; many faint brown (10YR 4/3) clay films on faces of pedes; few fine prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; few fine faint brown (10YR 5/3) iron depletions in the matrix; 7 percent gravel; neutral; gradual wavy boundary.
- Bt5—46 to 55 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak coarse subangular blocky structure; firm; few very fine roots throughout; many fine interstitial and tubular pores; many faint brown (10YR 4/3) clay films on faces of pedes; few fine prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; few fine faint brown (10YR 5/3) iron depletions in the matrix; 7 percent gravel; 1 percent cobbles; moderately acid; gradual wavy boundary.
- Bt6—55 to 63 inches; dark yellowish brown (10YR 4/4) sandy loam; weak coarse subangular blocky structure; firm; few very fine roots throughout; many fine interstitial and tubular pores; many faint brown (10YR 4/3) clay films on faces of pedes; 5 percent gravel; moderately acid; clear wavy boundary.
- 2Bt and E—63 to 70 inches; brown (10YR 4/3) sandy loam (Bt) as lamellae 1 inch to 1.25 inches thick with a combined thickness of 4 inches; weak thick platy structure; very friable; few very fine roots throughout; few very fine interstitial and tubular pores; common distinct brown (10YR 4/3) clay bridges between sand grains; 5 percent gravel; moderately acid; yellowish brown (10YR 5/4) sand (E); weak medium subangular blocky structure; very friable; few very fine roots throughout; few very fine interstitial and tubular pores; 5 percent gravel; moderately acid; gradual wavy boundary.
- 2E and Bt—70 to 78 inches; yellowish brown (10YR 5/4) loamy sand (E); weak medium subangular blocky structure; very friable; few very fine roots throughout; few very fine interstitial and tubular pores; 5 percent gravel; slightly acid; brown (10YR 4/3) loamy sand (Bt) as lamellae 1 inch to 1.5 inches thick with a combined thickness of 2 inches; weak thick platy structure; very friable; few very fine roots throughout; few very fine interstitial and tubular pores; common distinct brown (10YR 4/3) clay bridges between sand grains; 5 percent gravel; slightly acid; clear wavy boundary.
- 2B and BC—78 to 90 inches; 85 percent dark yellowish brown (10YR 4/4) loamy sand (B); weak thin platy structure; very friable; few very fine interstitial and tubular pores; 3 percent gravel; slightly acid; 15 percent light yellowish brown (10YR 6/4) sand (BC); single grain; loose; few very fine interstitial and tubular pores; 3 percent gravel; slightly acid; clear wavy boundary.
- 3C—90 to 100 inches; yellowish brown (10YR 5/4) fine sandy loam; weak thin platy structure; firm; pockets of sand; 5 percent gravel; strongly effervescent; slightly alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 40 to more than 80 inches

*Depth to carbonates:* 40 to more than 80 inches

*Particle-size control section:* 20 to 30 percent clay; more than 40 percent sand

*Ap or A horizon:*

Hue—10YR

Value—3 to 5, 6 or more dry

Chroma—1 to 4

Texture—fine sandy loam

Reaction—moderately acid to neutral

Content of rock fragments—1 to 14 percent

*E or EB horizon (where present):*

Hue—10YR

Value—5 or 6

Chroma—2 to 4

Texture—loam, silt loam, sandy loam, or fine sandy loam

*Bt or BE horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—sandy clay loam, clay loam, or loam; fine sandy loam or sandy loam in the lower part of the Bt horizon in some pedons

Reaction—strongly acid to neutral

Content of rock fragments—1 to 14 percent

*BC horizon (where present):*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—loam, sandy clay loam, clay loam, or sandy loam

Reaction—neutral or slightly alkaline

*C horizon (where present):*

Hue—10YR

Value—4 to 6

Chroma—3 or 4

Texture—loam or sandy loam

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—7 to 14 percent

*2Bt, 2Bt and E, 2E and Bt, or 2B and BC horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—fine sandy loam, sandy loam, loamy sand, or sand or the gravelly analogs of these textures

Reaction—strongly acid to neutral

Content of rock fragments—less than 15 percent; individual horizons can range up to 30 percent.

*2C horizon (where present):*

Hue—10YR

Value—5 or 6

Chroma—3 or 4

Texture—sandy loam, loamy sand, or sand or the gravelly analogs of these textures

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—less than 15 percent; individual horizons can range up to 34 percent.

*3C horizon:*

Hue—10YR

Value—4 to 6

Chroma—3 or 4

Texture—loam, sandy loam, or fine sandy loam; pockets of sand in some pedons

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—1 to 10 percent gravel

**Schoolcraft Series***Taxonomic classification:* Fine-loamy, mixed, superactive, mesic Typic Argiudolls**Typical Pedon for the Series**

Schoolcraft loam (fig. 28), on a southwest-facing slope of 1 percent, in a cultivated field at an elevation of 896 feet; Kalamazoo County, Michigan; about 1.5 miles north and 1.5 miles west of Schoolcraft; 1,200 feet east and 50 feet north of the southwest corner of sec. 11, T. 4 S., R. 12 W.; USGS Schoolcraft, Michigan, Northwest topographic quadrangle; lat. 42 degrees 07 minutes 41.2 seconds N. and long. 85 degrees 40 minutes 54.3 seconds W., NAD 27; UTM Zone 16, 608956 Easting and 4664846 Northing, NAD 83.

Ap—0 to 10 inches; black (10YR 2/1) loam, dark grayish brown (10YR 4/2) dry; weak fine granular structure; friable; few fine roots; 5 percent gravel; neutral; abrupt smooth boundary.

BE—10 to 14 inches; brown (7.5YR 4/3) loam; 10 percent black (10YR 2/1) loam A material filling root channels; moderate medium subangular blocky structure; friable; few fine roots; 5 percent gravel; slightly acid; clear smooth boundary.

Bt1—14 to 19 inches; brown (7.5YR 4/3) clay loam; moderate medium subangular blocky structure; firm; many distinct dark yellowish brown (10YR 3/4) clay films in pores and on faces of peds; 5 percent gravel; very strongly acid; clear wavy boundary.

Bt2—19 to 29 inches; dark brown (7.5YR 3/4) sandy clay loam; moderate medium subangular blocky structure; firm; many distinct dark yellowish brown (10YR 3/4) clay films in pores and on faces of peds; 14 percent gravel; very strongly acid; clear wavy boundary.

Bt3—29 to 39 inches; dark brown (7.5YR 3/3) gravelly sandy loam; moderate medium subangular blocky structure; friable; common distinct dark brown (10YR 3/3) clay films on rock fragments; 20 percent gravel; very strongly acid; clear wavy boundary.

2Bt4—39 to 42 inches; strong brown (7.5YR 4/6) loamy sand; weak coarse subangular blocky structure; very friable; few faint clay bridges between sand grains; 5 percent gravel; strongly acid; clear wavy boundary.

2BC1—42 to 59 inches; yellowish brown (10YR 5/6) sand; weak coarse subangular blocky structure; very friable; 5 percent gravel; moderately acid; gradual wavy boundary.



2BC2—59 to 77 inches; light yellowish brown (10YR 6/4) sand; weak coarse subangular blocky structure; very friable; neutral; gradual wavy boundary.

2C1—77 to 83 inches; light yellowish brown (10YR 6/4) sand; single grain; loose; 14 percent gravel; slightly effervescent; slightly alkaline; gradual wavy boundary.

2C2—83 to 95 inches; light yellowish brown (10YR 6/4) gravelly coarse sand; single grain; loose; 25 percent gravel; strongly effervescent; slightly alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 25 to 50 inches

*Depth to the sandy outwash:* 25 to 40 inches

*Kind of rock fragments:* Dominantly gravel

*Ap or A horizon:*

Hue—7.5YR or 10YR

Value—2, 2.5, or 3

Chroma—1 to 3

Texture—loam

Reaction—moderately acid to neutral

Content of rock fragments—0 to 10 percent

*BE horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—3 or 4

Texture—loam, silt loam, or sandy loam

Reaction—very strongly acid to neutral

Content of rock fragments—0 to 10 percent

*Bt horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—3 to 6

Texture—loam, clay loam, or sandy clay loam in the upper part; sandy loam or gravelly sandy loam in the lower part

Reaction—very strongly acid to neutral

Content of rock fragments—0 to 25 percent

*BC horizon (where present):*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—3 to 6

Texture—sandy loam or gravelly sandy loam

*2Bt horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—3 to 6

Texture—sand or loamy sand or the gravelly analogs of these textures

Reaction—very strongly acid to neutral

Content of rock fragments—0 to 25 percent

*2BC horizon:*

Hue—7.5YR or 10YR

Value—3 to 6

Chroma—3 to 6

Texture—sand or loamy sand or the gravelly analogs of these textures

Reaction—very strongly acid to neutral

Content of rock fragments—0 to 25 percent

*2C horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—sand, gravelly sand, or gravelly coarse sand; bands of loamy sand in some pedons

Reaction—neutral to moderately alkaline

Content of rock fragments—0 to 34 percent

## Selfridge Series

*Taxonomic classification:* Loamy, mixed, active, mesic Aquic Arenic Hapludalfs

### Typical Pedon for the Series

Selfridge sand, on a convex slope of 1 percent, in a residential area at an elevation of 612 feet; Monroe County, Michigan; about 5.5 miles southeast of Scofield; 1,970 feet west and 1,280 feet south of the northeast corner of sec. 18, T. 6 S., R. 9 E.; USGS Monroe, Michigan, topographic quadrangle; lat. 41 degrees 58 minutes 28.07 seconds N. and long. 83 degrees 24 minutes 17.43 seconds W., NAD 27; UTM Zone 17, 300756 Easting and 4649742 Northing, NAD 83.

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) sand, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; few roots; slightly acid; abrupt smooth boundary.

E—8 to 15 inches; brown (10YR 5/3) sand; single grain; loose; few roots; discontinuous streaks of strong brown (7.5YR 5/8) sand; common fine distinct yellowish brown (10YR 5/6) masses in which iron oxide has accumulated; common fine faint grayish brown (10YR 5/2) iron depletions; moderately acid; clear wavy boundary.

Bw—15 to 25 inches; yellowish brown (10YR 5/6) sand; single grain; loose; common fine distinct yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; common fine prominent light brownish gray (10YR 6/2) iron depletions in the matrix; neutral; abrupt wavy boundary.

2Bt1—25 to 29 inches; brown (10YR 4/3) sandy loam; weak coarse subangular blocky structure; friable; clay bridges between sand grains; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; common medium faint grayish brown (10YR 5/2) iron depletions in the matrix; 1 percent fine gravel; neutral; clear wavy boundary.

2Bt2—29 to 32 inches; reddish brown (5YR 5/3) clay loam; weak fine angular blocky structure; firm; common faint clay films on faces of peds; many fine prominent strong brown (7.5YR 5/6) masses that have accumulated iron oxide and are in the matrix; many fine prominent greenish gray (5GY 6/1) iron depletions; 1 percent fine gravel; moderately alkaline; clear wavy boundary.

2Cg1—32 to 60 inches; reddish gray (5YR 5/2) clay loam; massive; firm; many gray (10YR 6/1) carbonate nodules; common fine prominent yellowish brown (10YR 5/6) masses in which iron oxide has accumulated; common fine prominent greenish gray (5GY 6/1) iron depletions throughout; 1 percent fine gravel; strongly effervescent; moderately alkaline; gradual wavy boundary.

2Cg2—60 to 80 inches; reddish gray (5YR 5/2) clay loam; massive; firm; common fine prominent yellowish brown (10YR 5/6) masses in which iron oxide has accumulated; common fine prominent greenish gray (5GY 6/1) iron depletions; 1 percent fine gravel; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Depth to base of the argillic horizon:* 24 to 50 inches

*Thickness of the sandy material:* 20 to 40 inches

#### *Ap or A horizon:*

Hue—10YR

Value—2 to 4

Chroma—1 to 3

Texture—loamy sand or loamy fine sand

Reaction—strongly acid to neutral

Content of rock fragments—0 to 5 percent

#### *E horizon:*

Hue—7.5YR or 10YR

Value—5 or 6

Chroma—2 to 4

Texture—sand, fine sand, loamy sand, or loamy fine sand

Reaction—strongly acid to neutral

Content of rock fragments—0 to 5 percent

#### *Bw horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 8

Texture—sand, fine sand, loamy sand, or loamy fine sand

Reaction—strongly acid to neutral

Content of rock fragments—0 to 5 percent

#### *2Bt1 horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—1 to 6

Texture—sandy loam, sandy clay loam, loam, or silt loam

Reaction—strongly acid to slightly alkaline

Content of rock fragments—0 to 10 percent

#### *2Bt2 horizon:*

Hue—5YR to 2.5Y

Value—4 to 6

Chroma—1 to 4

Texture—clay loam, silty clay loam, or loam

Reaction—strongly acid to slightly alkaline

Content of rock fragments—0 to 10 percent

#### *2Cg or 2C horizon:*

Hue—5YR to 10YR

Value—5 or 6

Chroma—1 to 6

Texture—clay loam, loam, silt loam, or silty clay loam

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—0 to 10 percent

## Southwest Series

*Taxonomic classification:* Fine-silty, mixed, superactive, nonacid, mesic Typic Fluvaquents

### Typical Pedon for the Series

Southwest silt loam, on a concave slope of 1 percent, in a cultivated field at an elevation of 820 feet; Elkhart County, Indiana; about 3 miles north and 2 miles east of Wakarusa; 129 feet west and 1,167 feet south of the northeast corner of sec. 8, T. 36 N., R. 5 E.; USGS Foraker, Indiana, topographic quadrangle; lat. 41 degrees 35 minutes 28 seconds N. and long. 85 degrees 57 minutes 53 seconds W., NAD 27; UTM Zone 16, 586286 Easting and 4604903 Northing, NAD 83.

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; common very fine and fine roots throughout; slightly acid; clear wavy boundary.

Bg1—10 to 18 inches; dark grayish brown (10YR 4/2) silty clay loam; weak medium subangular blocky

structure; friable; common very fine and fine roots throughout; many fine and medium interstitial and tubular pores with moderate continuity; common medium faint brown (10YR 4/3) masses that have accumulated iron oxide and are in the matrix; slightly acid; clear wavy boundary.

Bg2—18 to 23 inches; dark grayish brown (10YR 4/2) silty clay loam; weak medium subangular blocky structure; friable; common very fine and fine roots throughout; common fine and medium interstitial and tubular pores with moderate continuity; common medium faint brown (10YR 4/3) masses that have accumulated iron oxide and are in the matrix; slightly acid; clear wavy boundary.

2Ab—23 to 34 inches; black (10YR 2/1) silty clay loam; moderate fine subangular blocky structure; firm; common very fine and fine roots throughout; neutral; clear wavy boundary.

2Bgb—34 to 45 inches; gray (10YR 5/1) silty clay loam; moderate medium subangular blocky structure; firm; many medium distinct brown (10YR 5/3) and common fine prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; neutral; clear wavy boundary.

3Ab1—45 to 55 inches; very dark grayish brown (10YR 3/2) silty clay loam; weak coarse subangular blocky structure; firm; common medium prominent dark yellowish brown (10YR 4/6) masses that have accumulated iron oxide and are in the matrix; neutral; gradual wavy boundary.

3Ab2—55 to 75 inches; very dark grayish brown (10YR 3/2) silty clay loam; weak thick platy structure; friable; common medium prominent dark yellowish brown (10YR 4/6) masses that have accumulated iron oxide and are in the matrix; neutral; gradual wavy boundary.

3Cg—75 to 80 inches; dark gray (5Y 4/1) silt loam; massive; friable; slightly effervescent; slightly alkaline.

### Range in Characteristics

*Depth to carbonates:* 40 to more than 80 inches

*Thickness of the overwash and depth to a buried soil:*  
20 to 40 inches

*Content of rock fragments:* 0 to 5 percent gravel below the overwash

#### *Ap horizon:*

Hue—10YR

Value—4

Chroma—2 or 3

Texture—silt loam

Reaction—slightly acid or neutral

#### *A horizon (where present):*

Hue—10YR

Value—3

Chroma—2 or 3

Texture—silt loam

Reaction—slightly acid or neutral

Thickness of the horizon—less than 7 inches

#### *Bg horizon:*

Hue—10YR

Value—4 or 5

Chroma—1 or 2

Texture—silt loam or silty clay loam

Reaction—slightly acid or neutral

#### *2Ab, 2Bgb, or 3Ab horizon:*

Hue—10YR or 2.5Y

Value—2 to 6

Chroma—1 or 2

Texture—silty clay loam, silt loam, clay loam, or loam

Reaction—slightly acid to slightly alkaline

#### *3Cg or 3C horizon (where present):*

Hue—10YR to 5Y

Value—4 or 5

Chroma—1 to 4

Texture—loam, silt loam, or clay loam

Reaction—slightly alkaline or moderately alkaline

## Tracy Series

*Taxonomic classification:* Coarse-loamy, mixed, active, mesic Ultic Hapludalfs

### Typical Pedon for the Series

Tracy sandy loam (fig. 29), in a convex, nearly level area under mixed hardwoods at an elevation of 708 feet; Porter County, Indiana; about 0.5 mile southwest of Malden; 2,360 feet west and 1,932 feet north of the center of sec. 30, T. 34 N., R. 5 W.; USGS Kouts, Indiana, topographic quadrangle; lat. 41 degrees 22 minutes 02.7 seconds N. and long. 87 degrees 02 minutes 08.19 seconds W., NAD 27; UTM Zone 16, 497019 Easting and 4579549 Northing, NAD 83.

A—0 to 5 inches; very dark brown (10YR 2/2) sandy loam, very dark grayish brown (10YR 3/2) crushed, grayish brown (10YR 5/2) dry; moderate medium and coarse granular structure; friable; 1 percent fine gravel, dominantly shale; strongly acid; abrupt smooth boundary.

E—5 to 9 inches; brown (7.5YR 5/3) loam; weak medium platy structure; friable; common fine vesicular voids; faint very dark gray (10YR 3/1)

dry; sand coatings on faces of peds; color disappears when moistened; few very dark grayish brown (10YR 3/2) wormcasts; 3 percent fine gravel, dominantly shale; very strongly acid; clear wavy boundary.

- Bt1—9 to 13 inches; brown (7.5YR 4/4) sandy loam; weak medium and fine subangular blocky structure; friable; common faint brown (7.5YR 4/4) clay films on faces of peds and as linings in voids; faint gray (10YR 5/1) very fine sand coatings on faces of peds; few very dark grayish brown (10YR 3/2) wormcasts; 5 percent fine gravel, dominantly shale; very strongly acid; clear wavy boundary.
- Bt2—13 to 24 inches; brown (7.5YR 4/4) sandy loam; moderate medium subangular blocky structure; friable; few fine voids; many faint brown (7.5YR 4/4) clay films on faces of peds and as linings in voids; common distinct dark brown (7.5YR 3/3) organic coatings on faces of peds; 13 percent fine gravel, dominantly shale; very strongly acid; clear wavy boundary.
- Bt3—24 to 33 inches; brown (7.5YR 4/4) sandy loam; moderate medium and coarse subangular blocky structure; friable; many faint brown (7.5YR 4/4) clay films on faces of peds and as linings in voids; common distinct dark brown (7.5YR 3/3) organic coatings on faces of peds; 13 percent fine and medium gravel, dominantly shale; very strongly acid; clear wavy boundary.
- Bt4—33 to 47 inches; brown (7.5YR 5/4) sandy loam; weak medium and coarse subangular blocky structure; friable; horizon has a 1-inch thick layer of brown (10YR 5/3) gravelly sandy loam; common distinct brown (7.5YR 4/4) clay films on faces of peds and as linings in voids; 14 percent fine gravel, dominantly shale; very strongly acid; clear wavy boundary.
- Bt5—47 to 60 inches; stratified brown (7.5YR 5/4) gravelly sandy clay loam and brown (10YR 5/3) gravelly loamy sand; weak coarse subangular blocky structure; firm and loose; common distinct dark brown (7.5YR 3/3) clay films on faces of peds; common prominent dark brown (7.5YR 3/3) clay films on surfaces of shale fragments and on cleavage planes; the gravelly loamy sand strata are 1 inch to 1½ inches thick and there are 3 strata in horizon; few shale channers, ½ inch to 2 inches in length and ¼-inch thick; 23 percent gravel, dominantly shale; very strongly acid; clear wavy boundary.
- 2C—60 to 80 inches; brown (10YR 5/3) stratified loamy sand, sand, and gravelly sand; single grain; loose; moderately acid.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 40 to 70 inches

*Depth to carbonates:* 6 feet or more

*Particle-size control section:* 14 to 18 percent clay

*Series control section:* 0 to 20 percent fine gravel in the upper part; 0 to 30 percent fine gravel in the lower part

#### *A horizon:*

Hue—10YR

Value—2 or 3; more than 5 when the uppermost 6 inches are mixed

Chroma—2

Texture—sandy loam

#### *Ap horizon (where present):*

Hue—7.5YR or 10YR

Value—3 or 4, more than 5 dry

Chroma—3 or 4

Texture—sandy loam

Thickness of the horizon—6 to 10 inches

#### *E horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 or 4

Texture—loam or sandy loam

#### *Bt horizon:*

Hue—7.5YR or 10YR

Value—4 to 6

Chroma—3 to 6

Texture—loam or sandy loam; sandy clay, sandy clay loam, or clay loam or the gravelly analogs of these textures

Reaction—very strongly acid or strongly acid

#### *2C horizon:*

Hue—10YR

Value—5 or 6

Chroma—3 to 6

Texture—stratified sand, gravelly sand, sandy loam, or loamy sand

Reaction—moderately acid to neutral

### Troxel Series

*Taxonomic classification:* Fine-silty, mixed, superactive, mesic Pachic Argiudolls

### Typical Pedon for the Series

Troxel silt loam, in a cultivated field at an elevation of about 855 feet; McHenry County, Illinois; about 2 miles



southwest of Woodstock; 165 feet south and 2,100 feet west of the northeast corner of sec. 14, T. 44 N., R. 6 E.; USGS Woodstock, Illinois, topographic quadrangle; lat. 42 degrees 17 minutes 53 seconds N. and long. 88 degrees 29 minutes 59 seconds W., NAD 27; UTM Zone 16, 376369 Easting and 4683962 Northing, NAD 83.

Ap—0 to 8 inches; black (10YR 2/1) silt loam, dark grayish brown (10YR 4/2) dry; weak very fine granular structure; friable; many very fine roots; slightly acid; abrupt smooth boundary.

A1—8 to 14 inches; black (10YR 2/1) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; many very fine roots; slightly acid; abrupt smooth boundary.

A2—14 to 27 inches; black (N 2.5/0) silt loam, dark grayish brown (10YR 4/2) dry; moderate fine granular structure; friable; common very fine roots; moderately acid; clear smooth boundary.

A3—27 to 33 inches; very dark brown (10YR 2/2) silt loam, grayish brown (10YR 5/2) dry; moderate very fine granular structure; friable; common very fine roots; moderately acid; clear smooth boundary.

BA—33 to 39 inches; brown (10YR 4/3) silt loam; moderate very fine subangular blocky structure; friable; common very fine roots; common distinct very dark grayish brown (10YR 3/2) organic coatings on faces of peds; moderately acid; clear smooth boundary.

Bt1—39 to 55 inches; brown (10YR 4/3) silty clay loam; moderate fine and medium subangular blocky structure; firm; few very fine roots; common distinct dark brown (10YR 3/3) clay films on faces of peds; common sand grains; moderately acid; clear smooth boundary.

2Bt2—55 to 60 inches; 60 percent brown (10YR 4/3) and 40 percent dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; firm; few very fine roots; common distinct dark brown (10YR 3/3) clay films on faces of peds; 5 percent gravel; moderately acid; clear smooth boundary.

2Bt3—60 to 67 inches; brown (10YR 4/3) gravelly sandy loam; weak medium subangular blocky structure; friable; common distinct dark brown (10YR 3/3) clay films on faces of peds; 17 percent gravel; slightly acid; clear smooth boundary.

2Bt4—67 to 75 inches; dark yellowish brown (10YR 4/4) stratified loamy sand and sandy loam; weak coarse subangular blocky structure; very friable; few distinct brown (10YR 4/3) clay films on faces of peds and in pores; 8 percent gravel; slightly acid; abrupt smooth boundary.

2Bt5—75 to 79 inches; 55 percent dark yellowish brown (10YR 4/4) and 45 percent brown (10YR 4/3) clay loam; weak medium angular blocky structure; firm; few distinct dark brown (10YR 3/3) clay films on faces of peds and in pores; 10 percent gravel; slightly acid; abrupt smooth boundary.

2BC—79 to 102 inches; 55 percent dark brown (7.5YR 3/2) and 45 percent brown (7.5YR 4/2) gravelly sandy clay loam; weak coarse angular blocky structure; friable; 18 percent gravel; slightly alkaline.

### Range in Characteristics

*Thickness of the solum:* 5 feet to over 10 feet

*Thickness of the mollic epipedon:* 20 to 45 inches

*Reaction:* Moderately acid to neutral in most parts of the series control section; some pedons range to slightly alkaline in the lower part

*Other features:* Some pedons have an AB horizon rather than a BA horizon.

*Ap, A, or AB horizon:*

Hue—10YR or 2.5Y, or N

Value—2, 2.5, or 3

Chroma—0 to 3

Texture—silt loam

*Bt or BA horizon:*

Hue—10YR

Value—3 to 5

Chroma—3 to 6

Texture—silt loam or silty clay loam

*2Bt or 2BC horizon:*

Hue—7.5YR or 10YR

Value—3 to 5

Chroma—2 to 6

Texture—clay loam, loam, or sandy clay loam or the gravelly analogs of these textures; strata of coarser textures in some pedons; darker colored, clay enriched subhorizon is common in some pedons

Content of rock fragments—0 to 20 percent

### Tyner Series

*Taxonomic classification:* Mixed, mesic Typic Udipsamments

### Typical Pedon for the Series

Tyner loamy sand, on a slope of 1 percent, in a cultivated field at an elevation of 784 feet; Elkhart County, Indiana; about 3 miles northeast of Bristol; 400 feet east and 453 feet south of the northwest corner of

sec. 20, T. 38 N., R. 7 E.; USGS Bristol, Indiana, topographic quadrangle; lat. 41 degrees 44 minutes 18 seconds N. and long. 85 degrees 45 minutes 20 seconds W., NAD 27; UTM Zone 16, 603483 Easting and 4621478 Northing, NAD 83.

- Ap—0 to 12 inches; dark brown (7.5YR 3/3) loamy sand, light brown (7.5YR 6/3) dry; weak fine granular structure; very friable; many fine and few medium roots throughout; 2 percent gravel; very strongly acid; abrupt smooth boundary.
- Bw1—12 to 20 inches; strong brown (7.5YR 5/6) loamy sand; weak medium subangular blocky structure; very friable; few medium roots throughout; 4 percent gravel; moderately acid; clear wavy boundary.
- Bw2—20 to 27 inches; yellowish brown (10YR 5/6) fine sand; weak medium and coarse subangular blocky structure; very friable; few medium roots throughout; 2 percent gravel; moderately acid; clear wavy boundary.
- Bw3—27 to 34 inches; yellowish brown (10YR 5/6) sand; weak coarse subangular blocky structure; very friable; few medium roots throughout; 1 percent gravel; moderately acid; clear wavy boundary.
- Bw4—34 to 41 inches; yellowish brown (10YR 5/6) sand; weak coarse subangular blocky structure; very friable; few medium roots throughout; 3 percent gravel; slightly acid; clear wavy boundary.
- Bw5—41 to 51 inches; strong brown (7.5YR 5/6) sand; single grain; loose; 9 percent gravel; slightly acid; clear wavy boundary.
- Bw6—51 to 60 inches; strong brown (7.5YR 4/6) sand; single grain; loose; 2 percent gravel; slightly acid; clear wavy boundary.
- Bw7—60 to 75 inches; strong brown (7.5YR 4/6) coarse sand; single grain; loose; 4 percent gravel; slightly acid; clear wavy boundary.
- Bw8—75 to 80 inches; brown (7.5YR 4/4) sand; single grain; loose; 5 percent gravel; neutral.

### Range in Characteristics

*Thickness of the solum:* 36 to more than 80 inches

*Content of rock fragment:* 0 to 10 percent throughout the series control section

*Rock fragments:* Mixed lithology with a high content of shale, 2 to 5 millimeters in size

*Particle-size control section:* Silt content plus clay content averages 10 percent or more

*Ap horizon:*

Hue—7.5YR or 10YR

Value—3 or 4, 6 or more dry

Chroma—2 to 4

Texture—loamy sand

Reaction—very strongly acid to neutral depending on liming history

*E horizon (where present):*

Hue—10YR

Value—5 or 6

Chroma—3 or 4

*Bw horizon or BC horizon (where present):*

Hue—7.5YR or 10YR

Value—4 or 5

Chroma—3 to 6

Texture—loamy sand, loamy fine sand, sand, or fine sand; ranges to coarse sand in the lower part

Reaction—very strongly acid to neutral

*C horizon (where present):*

Hue—10YR

Value—4 to 6

Chroma—2 to 6; chroma of 2 is due to the inherent color of the sand and not to aquic conditions

Texture—sand, coarse sand, or fine sand; stratified thin bands of loamy sand in some pedons

Reaction—strongly acid to neutral

## Waterford Series

*Taxonomic classification:* Coarse-loamy, mixed, active, mesic Fluvaquent Eutropepts

### Typical Pedon for the Series

Waterford loam, in a nearly level area in the woods at an elevation of 781 feet; Elkhart County, Indiana; about 1 mile south and 0.5 mile west of the center of Goshen; 2,367 feet north and 2,143 feet east of the southwest corner of sec. 16, T. 36 N., R. 6 E.; USGS Goshen NW, Indiana, topographic quadrangle; lat. 41 degrees 34 minutes 22 seconds N. and long. 85 degrees 50 minutes 26 seconds W., NAD 27; UTM Zone 16, 596662 Easting and 4602999 Northing, NAD 83.

A—0 to 8 inches; dark brown (10YR 3/3) loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; many medium roots throughout; common very fine and fine interstitial and tubular pores with moderate continuity; neutral; clear wavy boundary.

Bw1—8 to 15 inches; dark yellowish brown (10YR 4/4)

fine sandy loam; weak medium subangular blocky structure; very friable; common very fine to medium roots throughout; many fine and medium interstitial and tubular pores with moderate continuity; very few distinct dark brown (10YR 3/3) organic coatings in root channels and pores; common fine distinct dark grayish brown (10YR 4/2) iron depletions in the matrix; neutral; clear wavy boundary.

Bw2—15 to 24 inches; brown (10YR 4/3) fine sandy loam; moderate medium subangular blocky structure; friable; common very fine to medium roots throughout; many very fine to medium interstitial and tubular pores with moderate continuity; many fine faint brown (7.5YR 4/4) masses that have accumulated iron oxide and are in the matrix; few fine faint dark brown (7.5YR 3/2) rounded iron and manganese oxide concretions; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear wavy boundary.

Bw3—24 to 36 inches; dark yellowish brown (10YR 4/4) sandy clay loam; moderate medium subangular blocky structure; friable; common very fine to medium roots throughout; many very fine to medium interstitial and tubular pores with moderate continuity; common fine distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; few fine distinct very dark brown (7.5YR 2.5/2) rounded iron and manganese oxide concretions; many fine distinct grayish brown (10YR 5/2) iron depletions in the matrix; neutral; clear wavy boundary.

Bw4—36 to 41 inches; yellowish brown (10YR 5/4) loam; moderate medium subangular blocky structure; friable; common very fine and fine roots throughout; common fine interstitial and tubular pores with moderate continuity; many medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; few fine prominent black (N 2.5/0) rounded iron and manganese oxide concretions; many medium distinct gray (10YR 5/1) iron depletions in the matrix; neutral; clear wavy boundary.

2C—41 to 46 inches; brown (10YR 5/3) loamy sand; single grain; loose; many medium faint grayish brown (10YR 5/2) iron depletions in the matrix; strongly effervescent; moderately alkaline; clear wavy boundary.

3Ab—46 to 50 inches; black (10YR 2/1) loamy sand; massive; very friable; common fine interstitial and tubular pores with moderate continuity; common

medium distinct gray (10YR 5/1) iron depletions in the matrix; neutral; clear wavy boundary.

3Cb—50 to 60 inches; brown (10YR 5/3) gravelly coarse sand; single grain; loose; many medium distinct gray (10YR 5/1) iron depletions in the matrix; 25 percent gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

3Cgb—60 to 80 inches; dark gray (10YR 4/1) gravelly coarse sand; single grain; loose; 30 percent gravel; strongly effervescent; moderately alkaline.

### Range in Characteristics

*Depth to the base of the cambic horizon:* 24 to 46 inches

*Thickness of the loamy alluvium:* 24 to 46 inches

#### *A horizon:*

Hue—10YR

Value—3 or 4

Chroma—2 or 3

Texture—loam

Reaction—slightly acid to slightly alkaline

Content of rock fragments—0 to 7 percent gravel

#### *Bw or Bg horizon:*

Hue—10YR

Value—4 or 5

Chroma—2 to 6

Texture—loam, sandy loam, fine sandy loam, or sandy clay loam

Reaction—slightly acid to slightly alkaline

Content of rock fragments—0 to 7 percent gravel

#### *2C or 2Cg horizon:*

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 4

Texture—sand, loamy sand, or coarse sand

Reaction—neutral or slightly alkaline

Content of rock fragments—0 to 14 percent gravel

#### *3Ab horizon:*

Hue—10YR

Value—2 or 3

Chroma—1 or 2

Texture—loamy sand

Reaction—slightly acid or neutral

Content of rock fragments—0 to 14 percent gravel

#### *3Cb or 3Cgb horizon:*

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 4

Texture—very gravelly coarse sand or gravelly coarse sand

Reaction—slightly alkaline or moderately alkaline  
Content of rock fragments—15 to 40 percent gravel

### **Whitaker Series**

*Taxonomic classification:* Fine-loamy, mixed, active, mesic Aeric Endoaqualfs

#### **Typical Pedon for the Series**

Whitaker loam, on a less than 1 percent slope, in a cultivated field at an elevation of about 800 feet; Marshall County, Indiana; about 2 miles south of Bremen; 1,000 feet north and 2,100 feet west of the southeast corner of sec. 11, T. 34 N., R. 3 E.; USGS Bremen, Indiana, topographic quadrangle; lat. 41 degrees 24 minutes 28.6 seconds N. and long. 86 degrees 08 minutes 39.1 seconds W., NAD 27; UTM Zone 16, 571529 Easting and 4584404 Northing, NAD 83.

- Ap—0 to 9 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; weak medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary.
- E—9 to 17 inches; brown (10YR 5/3) loam; moderate medium subangular blocky structure; friable; common fine roots; common medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; slightly acid; clear wavy boundary.
- Btg1—17 to 27 inches; grayish brown (10YR 5/2) clay loam; moderate medium subangular blocky structure; firm; many distinct gray (10YR 5/1) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/8) masses that have accumulated iron oxide and are in the matrix; common fine black (10YR 2/1) iron and manganese oxide concretions; 2 percent fine gravel; strongly acid; gradual wavy boundary.
- Btg2—27 to 39 inches; grayish brown (10YR 5/2) sandy clay loam; moderate medium subangular blocky structure; firm; many distinct gray (10YR 5/1) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; common fine black (10YR 2/1) iron and manganese oxide concretions; 2 percent fine gravel; moderately acid; clear wavy boundary.
- BC—39 to 48 inches; dark yellowish brown (10YR 4/4) sandy loam; weak coarse subangular blocky

structure; friable; common medium distinct gray (10YR 5/1) iron depletions in the matrix; slightly acid; clear wavy boundary.

- C1—48 to 58 inches; brown (10YR 5/3) stratified silt loam and loam; massive; friable; thin strata of loamy sand and fine sand; common medium distinct yellowish brown (10YR 5/6) masses that have accumulated iron oxide and are in the matrix; common fine faint grayish brown (10YR 5/2) iron depletions in the matrix; slightly effervescent; moderately alkaline; clear wavy boundary.
- C2—58 to 86 inches; brown (10YR 5/3) stratified loamy fine sand, fine sand, loamy sand, and sand; massive; very friable and loose; strongly effervescent; moderately alkaline.

#### **Range in Characteristics**

*Depth to the base of the argillic horizon:* 32 to 60 inches

*Thickness of the silty sediments:* 0 to 20 inches

*Content of rock fragments:* 0 to 5 percent fine gravel in the solum; 0 to 14 percent fine gravel in the substratum

#### *Ap horizon:*

Hue—10YR

Value—4 to 6

Chroma—2 or 3

Texture—loam

Reaction—moderately acid to neutral

#### *E or BE horizon:*

Hue—10YR

Value—4 or 5

Chroma—2 or 3

Texture—loam, sandy loam, or fine sandy loam; less commonly silty clay loam or silt loam

Reaction—moderately acid to neutral

#### *Btg or Bt horizon:*

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—1 to 6

Texture—loam, sandy loam, clay loam, or sandy clay loam; silty clay loam up to 10 inches thick in the upper part of some pedons

Reaction—strongly acid or moderately acid in the upper part; moderately acid to neutral in the lower part

#### *BC or BCg horizon:*

Hue—7.5YR to 2.5Y

Value—4 to 6

Chroma—1 to 6

Texture—loam or sandy loam

Reaction—moderately acid to slightly alkaline



*C or Cg horizon:*

Hue—10YR or 2.5Y

Value—4 to 6

Chroma—1 to 6

Texture—stratified loam, silt loam, sandy loam, fine sandy loam, or very fine sandy loam; strata of coarse sandy loam, loamy coarse sand, coarse sand, sand, loamy fine sand, fine sand, or loamy sand in some pedons

Reaction—slightly acid to moderately alkaline

**Williamstown Series**

*Taxonomic classification:* Fine-loamy, mixed, active, mesic Aquic Hapludalfs

**Typical Pedon for MLRA 111**

Williamstown loam, on a slope of 4 percent, in a pasture at an elevation of 865 feet; Elkhart County, Indiana; about 4.5 miles east and 1.25 miles north of Nappanee; 1,475 feet south and 2,030 feet east of the northwest corner of sec. 26, T. 35 N., R. 5 E.; USGS Nappanee East, Indiana, topographic quadrangle; lat. 41 degrees 27 minutes 37 seconds N. and long. 85 degrees 55 minutes 05 seconds W., NAD 27; UTM Zone 16, 590357 Easting 4590425 Northing, NAD 83.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; many very fine and fine roots throughout; common very fine and fine tubular pores; 2 percent gravel; strongly acid; abrupt smooth boundary.

Bt1—7 to 12 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; many very fine and fine roots throughout; common very fine and fine tubular pores; common faint dark yellowish brown (10YR 4/4) clay films on faces of peds; common faint light yellowish brown (10YR 6/4) silt coatings on faces of peds; common distinct dark grayish brown (10YR 4/2) organic coatings in root channels and pores; 2 percent gravel; strongly acid; clear wavy boundary.

Bt2—12 to 20 inches; dark yellowish brown (10YR 4/6) clay loam; moderate medium subangular blocky structure; firm; common very fine roots throughout; common very fine and fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; few distinct dark grayish brown (10YR 4/2) organic coatings in root channels and pores; few faint light yellowish brown (10YR 6/4) silt coatings on faces of peds; few

black (N 2.5/0) masses in which iron and manganese oxide have accumulated; common medium prominent grayish brown (10YR 5/2) iron depletions; 2 percent gravel; strongly acid; clear wavy boundary.

Bt3—20 to 27 inches; dark yellowish brown (10YR 4/6) clay loam; moderate medium subangular blocky structure; firm; common very fine roots throughout; common very fine and fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; few distinct dark grayish brown (10YR 4/2) organic coatings in root channels and pores; few faint light yellowish brown (10YR 6/4) silt coatings on faces of peds; few black (N 2.5/0) masses in which iron and manganese oxide have accumulated; common medium prominent grayish brown (10YR 5/2) iron depletions; 2 percent gravel; neutral; clear wavy boundary.

Bt4—27 to 34 inches; dark yellowish brown (10YR 4/4) clay loam; moderate medium subangular blocky structure; friable; common very fine roots throughout; common very fine and fine tubular pores; common distinct brown (10YR 4/3) clay films on faces of peds and in pores; 2 percent gravel; neutral; clear wavy boundary.

BCt—34 to 39 inches; yellowish brown (10YR 5/4) loam; weak coarse subangular blocky structure; firm; few very fine roots between peds; few fine tubular pores; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; 5 percent gravel; slightly effervescent; slightly alkaline; clear wavy boundary.

Cd1—39 to 56 inches; yellowish brown (10YR 5/4) loam; weak coarse subangular blocky structure parting to weak fine subangular blocky; very firm; few fine tubular pores; few faint dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; 5 percent gravel; slightly effervescent; slightly alkaline; clear wavy boundary.

Cd2—56 to 66 inches; yellowish brown (10YR 5/4) loam; weak very coarse prismatic structure parting to weak medium platy; very firm; few fine tubular pores; few faint dark gray (10YR 4/1) clay films on faces of peds; 5 percent gravel; strongly effervescent; slightly alkaline; clear wavy boundary.

Cd3—66 to 80 inches; yellowish brown (10YR 5/4) loam; weak very coarse prismatic structure; very firm; yellowish brown (10YR 5/6) oxidized zone 2 to 5 millimeters thick along vertical fracture planes that are 6 to 10 inches apart; 5 percent gravel; strongly effervescent; slightly alkaline.

### Range in Characteristics

*Depth to the base of the argillic horizon:* 20 to 40 inches

*Depth to carbonates:* 20 to 40 inches

*Thickness of the loess:* 0 to 22 inches

*Particle-size control section:* 27 to 35 percent clay

*Rock fragments:* Dominantly of limestone or crystalline lithology

*Other features:* Some pedons have a BE horizon with chroma of 4 to 6; some pedons have a CBt or 2CBt horizon.

#### *Ap horizon:*

Hue—10YR

Value—4 or 5

Chroma—2 or 3

Texture—clay loam, loam, or fine sandy loam

Reaction—strongly acid to neutral

Content of rock fragments—0 to 10 percent

#### *A horizon (where present):*

Hue—10YR

Value—3

Chroma—1

Reaction—strongly acid to neutral

Content of rock fragments—0 to 10 percent

Thickness of the horizon—up to 6 inches

#### *Bt or 2Bt horizon:*

Hue—10YR

Value—4 or 5

Chroma—3 to 6

Texture—silty clay loam or clay loam

Reaction—very strongly acid to neutral

Content of rock fragments—0 to 10 percent

#### *BCt or 2BCt horizon:*

Hue—10YR

Value—4 to 6

Chroma—3 to 6

Texture—loam or fine sandy loam

Reaction—neutral to moderately alkaline

Content of rock fragments—1 to 10 percent

#### *Cd or 2Cd horizon:*

Hue—10YR

Value—5 or 6

Chroma—3 or 4

Texture—loam or less commonly fine sandy loam

Reaction—slightly alkaline or moderately alkaline

Content of rock fragments—1 to 10 percent

### **Wunabuna Series**

*Taxonomic classification:* Fine, mixed, superactive, nonacid, mesic Fluvaquent Endoaquepts

### Typical Pedon for the Series

Wunabuna silt loam, in a linear, nearly level area in a cultivated field at an elevation of 773 feet; Elkhart County, Indiana; about 1.5 miles southwest of Dunlap; 2,481 feet south and 90 feet west of the northeast corner of sec. 34, T. 37 N., R. 5 E.; USGS Foraker, Indiana, topographic quadrangle; lat. 41 degrees 36 minutes 58 seconds N. and long. 85 degrees 55 minutes 35 seconds W., NAD 27; UTM Zone 16, 589446 Easting and 4607717 Northing, NAD 83.

Ap—0 to 7 inches; dark brown (10YR 3/3) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; common fine and medium roots throughout; common fine to coarse interstitial and tubular pores throughout; neutral; abrupt smooth boundary.

A1—7 to 15 inches; dark brown (10YR 3/3) silty clay loam, light brownish gray (10YR 6/2) dry; weak coarse subangular blocky structure; very firm; common fine and medium roots throughout; common fine to coarse interstitial and tubular pores throughout; neutral; clear smooth boundary.

A2—15 to 21 inches; dark brown (10YR 3/3) silty clay loam, light brownish gray (10YR 6/2) dry; moderate medium subangular blocky structure; firm; common fine and medium roots throughout; common fine to coarse tubular pores throughout; neutral; clear smooth boundary.

Bg—21 to 32 inches; dark gray (10YR 4/1) silty clay loam; moderate medium angular blocky structure; firm; common fine and medium roots throughout; common fine to coarse tubular pores throughout; many distinct very dark gray (10YR 3/1) organic coatings on faces of peds; many fine and medium distinct dark yellowish brown (10YR 4/4) masses that have accumulated iron oxide and are in the matrix; neutral; clear smooth boundary.

2Ab—32 to 38 inches; very dark gray (10YR 3/1) silty clay; moderate medium subangular blocky structure; firm; common fine and medium roots throughout; common coarse tubular pores throughout; common distinct dark grayish brown (10YR 4/2) clay depletions in root channels and pores; neutral; abrupt smooth boundary.

3Oa1—38 to 60 inches; muck (sapric material), black (10YR 2/1) broken face, black (N 2.5/0) rubbed, very dark brown (10YR 2/2) after exposure to air; about 5 percent fiber, 1 percent rubbed; massive; very friable; common coarse interstitial and tubular pores throughout; slightly alkaline; gradual smooth boundary.

3Oa2—60 to 80 inches; muck (sapric material), black (10YR 2/1) broken face, black (N 2.5/0) rubbed,

very dark brown (10YR 2/2) after exposure to air; about 10 percent fiber, 3 percent rubbed; massive; very friable; slightly acid.

### **Range in Characteristics**

*Depth to organic materials:* 16 to 40 inches

*Particle-size control section:* More than 35 percent clay

*Ap or A horizon:*

Hue—10YR

Value—2 to 4; where values are 2 or 3, dry values are 6 or more

Chroma—1 to 3

Texture—silt loam

Reaction—slightly acid to slightly alkaline

*Bg horizon:*

Hue—10YR or 2.5Y

Value—4 or 5

Chroma—1 or 2

Texture—silt loam, silty clay loam, or silty clay

Reaction—slightly acid to slightly alkaline

*2Ab horizon:*

Hue—10YR or N

Value—2, 2.5, or 3

Chroma—0 to 3

Texture—silt loam, silty clay loam, or silty clay

Reaction—slightly acid to slightly alkaline

*30a horizon:*

Hue—10YR or N

Value—2, 2.5, or 3

Chroma—0 to 2

Texture—muck (sapric material)

Reaction—strongly acid to slightly alkaline

# Formation of the Soils

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This section discusses the factors and the processes of soil formation as it relates to soils developed in St. Joseph County.

## Factors of Soil Formation

Soil forms through physical and chemical weathering of geologic material. Soil development is determined by additions to the soil; losses from the soil; translocations within the soil; and transformations within the soil. The characteristics of a soil at any given point are determined by the physical and mineralogical composition of the parent material; the climate under which the soil material was deposited and has existed since deposition; the plant and animal life associated with the soil; the relief, or lay of the land; and the length of time that the forces of soil formation have acted on the soil material.

Climate and plant and animal life, chiefly plants, are active factors of soil formation. These factors act on the parent material that has accumulated through the weathering of rock and slowly change it into a natural body that has genetically related horizons. The effects of climate and plant and animal life are bound by relief. Within St. Joseph County the weather patterns do not change significantly; therefore, plants are the major active factor of soil formation. The parent material affects the kind of soil profile that forms. Finally, time is needed for the transformation of the parent material into a soil. Some time is always required for the differentiation of soil horizons.

The factors of soil formation are so closely interrelated in their effects on the soil that few generalizations can be made regarding the effects of any one factor unless conditions are specified for the other four.

## Climate

Climate helps to determine the kind of plant and animal life on and in the soil, the amount of water available for the weathering of minerals, the translocation of soil material, and the rate of chemical reaction in the soil. These influences are important, but

they affect large areas rather than relatively small areas, such as those the size of a county.

The climate in St. Joseph County is cold in winter, hot and humid in summer. It is presumably similar to the climate under which the soils formed. The soils in the county differ from soils that formed under a dry, warm climate and from those that formed under a hot, moist climate. The climate is uniform throughout the county. There are no major differences among the soils resulting from any differences in climate. More detailed information about the climate is available under the heading "General Nature of the County."

## Plant and Animal life

Plants have been one of the principal organisms influencing the soils in St. Joseph County. Bacteria, fungi, soil micro-organisms, and earthworms also have affected the formation of the soil in the county. The chief contribution of plant and animal life is the addition of organic matter and nitrogen to the soil. The kind of organic material in and on the soil depends on the kind of native plants that grew on the soil. The remains of these plants accumulated in the surface layer, decayed, and eventually became humus. The roots of the plants provided channels for the downward movement of water through the soil, and they added organic matter as they decayed. Bacteria and soil micro-organisms helped to break down the organic matter into plant nutrients.

The native vegetation in St. Joseph County was mainly deciduous trees, but a few areas supported prairie grasses. Differences in natural soil drainage and variations in the kind of parent material affected the composition of the vegetative cover. Some somewhat poorly drained soils on the till plain, such as Crosier, formed from an influence of prairie grasses. Other well drained upland soils, such as Riddles, mainly supported a variety of oak, walnut, and hickory. The somewhat excessively drained Coloma soils supported white oak and black oak. Wet soils, such as Maumee and Rensselaer soils, primarily supported pin oak, black willow, cottonwood, and sycamore. The soils that formed dominantly under forest vegetation



generally have less organic matter and are more leached than the soils that formed dominantly under prairie grasses.

## Relief

Relief, or topography, has a marked affect on the soils in St. Joseph County through its influence on natural soil drainage, runoff, erosion, plant cover, and soil temperature. Slopes range from nearly level to very steep. Runoff is most rapid on the more steep slopes. Water is temporarily or permanently ponded in the lower areas.

Natural soil drainage in the county ranges from excessively drained on sandy ridgetops to very poorly drained in depressions filled with organic materials. Through its affect on soil aeration, drainage determines the color of the soil. Water and air move freely through well drained soils but very slowly through very poorly drained soils. In well aerated soils, the iron compounds that give soils their color are brightly colored and oxidized. The excessively drained Tyner soils are an example. Antung and other poorly aerated, very poorly drained soils are dull gray because the iron has been reduced, making it soluble, leaving the mineral color.

The soils with intermediate drainage are poorly drained, somewhat poorly drained, moderately well drained, well drained, and somewhat excessively drained. These soils have varying depths to the water table and varying depths to the reduced gray colors. Somewhat excessively drained and well drained soils do not have water table features within a depth of 40 inches of the surface.

## Parent Material and Geology

Parent material is the geologic mass in which a soil forms. It can be consolidated, such as bedrock or unconsolidated, such as glacial materials, recent alluvium, wind blown materials, or lake bed deposits. In St. Joseph County, the parent materials are unconsolidated and were deposited by continental glaciers and by meltwater from those glaciers. The parent materials are glacial till, glacial outwash, lacustrine deposits (lakebed materials), and recent alluvium. Deep organic matter deposits can also be found. Parent material determines the limits of the chemical and mineralogical composition of the soil. Some of these materials were reworked and redeposited by the subsequent actions of water and wind. Some authorities believe the most recent glaciers covered the county about 15,000 years ago and finally retreating about 12,000 years ago. Although

the parent materials are of similar glacial origin, their properties vary greatly, sometimes within small areas, depending on how the materials were deposited.

Glacial till is material deposited directly by glaciers with little or no water action. It consists of particles of different sizes that are mixed together. The small pebbles in glacial till have sharp corners, indicating that they have not been worn by moving water. The glacial till in St. Joseph County is mainly from the Huron-Saginaw lobe and includes a small portion from the Erie lobe and the Michigan lobe. This glacial till is calcareous, has a variety of densities and is sandy loam, loam, or clay loam. Crosier soils are an example of soils that formed in firm, loamy glacial till. These soils typically are medium textured and have a well developed structure.

Glacial outwash material was deposited by moving water from melting glaciers. The size of the particles that make glacial outwash varies, depending on the velocity of the water that carried the material. Water with high velocity deposited those particles heavy enough to fall out of current. These were usually boulders, cobbles, or gravel. Water with slower velocity deposited materials smaller in size. Clay, silt, and very fine sand were washed down stream. Outwash deposits generally occur as layers of similar-size particles, such as sandy loam, sand, gravel, and other coarse particles, depending on the weather during glacial melt. The warmer the weather, the more the glaciers melted and the faster the water was moving. Therefore, the larger materials were deposited. The cooler the weather, the less the glaciers melted and the slower the water was moving. Therefore, the smaller materials were deposited. Gilford soils are an example of soils that formed in glacial outwash material.

Lacustrine material was deposited by still, ponded, or very slow moving glacial meltwater. Since the coarser fragments dropped out of the moving water as glacial outwash, only the finer particles such as very fine sand, silt, and clay remain to settle in still water. Lacustrine deposits are silty or clayey. Lacustrine deposits are usually low and flat on the landscape, however, there are some lacustrine deposits that formed on the top of glaciers. Water accumulated in the low areas on top of the glacier and captured the materials blowing over the top of the glacier. When the glacier melted, these deposits settled as hills on the landscape. The soils in St. Joseph County that formed in these deposits are medium to fine textured. Del Rey and Milford soils are an example of soils that formed in lacustrine materials.

Recent alluvium was deposited by floodwater along present streams. This material varies in texture,

depending on the speed of the water from which it was deposited. Abscota and Cohoctah are examples of soils that formed in recent alluvium.

Organic material occurs as deposits of plant remains. After the glaciers melted out of the area, water was ponded in depressions, in kettle lakes on outwash plains, lake plains, and till plains. Grasses and sedges growing around the edges of these lakes eventually died and their remains accumulated in these depressions. As a result of the wetness and subsequent lack of oxygen, the plant remains decomposed very slowly to an unrecognizable material, labeled as muck. As the ponded areas evolved, water-tolerant trees grew and died, depositing their remains in the water and adding to the accumulation. The ponded areas were eventually filled with organic material. Houghton soils are an example of soils that formed in deep organic material. Other organic deposits are formed dependant on the depth of the ponded water. Generally, with depth, the organisms are different in ponded areas. Medium depth lakes have many species of amphibians and the products of their existence accumulates as a layer of limnic material called coprogenous earth. This material is olive or green in color and when dry it does not absorb water. Muskego soils are an example of soils that formed in organic material and a deep layer of coprogenous earth. Deep lakes contained organisms with calcium carbonate exoskeletons or bone structures and the product of their existence accumulates as a limnic material called marl. Marl is very high in calcium carbonate and has a very high pH. Edwards soils are an example of soils that formed in organic material and a deep layer of marl.

## Time

Generally, a long time is required for the processes of soil formation to result in the formation of distinct horizons. Differences in the length of time that the parent material has been in place and the amount of disturbance, such as erosion or deposition, are commonly reflected in the degree of profile development.

The soils in St. Joseph County range from recently deposited, in the flood plains, to approximately 15,000 years old, in the uplands. The glacial deposits in which many of the soils formed have been exposed to the soil-forming processes long enough for the development of distinct horizons. Soils that formed along flood plains are very young because there is

new material being deposited frequently, and the soil-forming process starts again with each disturbance.

## Processes of Soil Formation

Several processes have been involved in the formation of the soils in St. Joseph County (Benton, 1977; Jenny, 1980; Ruhe, 1956; Thornbury, 1969). These processes are additions, such as organic matter; losses or dissolution, transfer, and removal of compounds such as calcium carbonate and bases; the liberation and translocation of silicate clay minerals; and transformation such as reduction and transfer of iron or weathering of silicate clays. In most of the soils, more than one of these processes have helped to differentiate horizons.

Some organic matter has accumulated in the surface layer of all the soils in the county (Simonson, 1959; Stevenson, 1982). The content of organic matter of most soils is moderate, with a range from very low to very high. Generally, the soils that have the most organic matter, such as the Houghton soils, have a thick, dark layer of organic matter on the surface and are very poorly drained.

Carbonates and bases have been leached from the upper horizons of nearly all the soils in St. Joseph County. Leaching of carbonates and salts preceded the translocation of silicate clay minerals. Most of the carbonates and the salts have been leached from the A and B horizons of most soils. Leaching is indicated by the absence of carbonates and by an acid reaction.

Clay accumulates in pores and on the faces of structural units along which water moves. The leaching of bases and the subsequent translocation of silicate clays are among the more important processes of horizon differentiation in the county. Miami soils are an example of soils in which translocated silicate clay has accumulated in the Bt horizon.

Gleying, or the reduction and transfer of iron, has occurred in all of the very poorly drained to moderately well drained soils. In these naturally wet soils, this process has significantly affected horizon differentiation. A gray color in the subsoil indicates the reduction and redistribution of iron oxides. Reduction is commonly accompanied by a transfer of the iron, either from upper horizons to lower horizons or removal of the iron from the soil profile. Mottles (now referred to as redoximorphic features), which are in soil horizons that have been reduced, indicate the segregation of iron oxide (Birkeland, 1974; Birkeland, 1984; Buol and others, 1980; Franzmeier, 1997; Hans, 1941).



# References

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- Allan, P.F., L.E. Garland, and R. Dugan. 1963. Rating northeastern soils for their suitability for wildlife habitat. In Transactions of the twenty-eighth North American wildlife and natural resources conference.
- American Association of State Highway and Transportation Officials (AASHTO). 2000. Standard specifications for transportation materials and methods of sampling and testing. 20th edition, 2 volumes.
- American Society for Testing and Materials (ASTM). 2001. Standard classification of soils for engineering purposes. ASTM Standard D 2487-00.
- Benton, Hezekiah, Jr. 1977. Soil survey of St. Joseph County, Indiana. U.S. Department of Agriculture, Soil Conservation Service.
- Birkeland, Peter W. 1974. Pedology, weathering, and geomorphological research.
- Birkeland, Peter W. 1984. Soils and geomorphology. 2nd edition.
- Buol, S.W., F.D. Hole, and R.J. McCracken. 1980. Soil genesis and classification. 3rd edition.
- Cowardin, L.M., and others. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service. FWS/OBS-79/31.
- Federal Register. February 24, 1995. Hydric soils of the United States.
- Franzmeier, D. P. 1997. Parent materials, landforms and soil morphology. Department of Agronomy. Purdue University.
- Gann, R. W. and R. Liles. 1994. Indiana agricultural statistics 1993-1994.
- Gann, R. W. and R. Liles. 2000. Indiana agricultural statistics 1999-2000.
- Jenny, Hans. 1941. Factors of soil formation.
- Jenny, Hans. 1980. The soil resource—Origin and behavior. Ecological Studies.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Ruhe, Robert V. 1956. Geomorphic surfaces and the nature of soils. Soil Science.
- Schoeneberger, P.J., D.A. Wysocki, E.C. Benham, and W.D. Broderson, editors. 2002. Field book for describing and sampling soils. Version 2.0. U.S. Department of Agriculture, Natural Resources Conservation Service.



Simonson, Roy W. 1959. Outline of a generalized theory of soil genesis. Soil Science Society of America Proceedings.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2003. Keys to soil taxonomy. 9th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Stevenson, F.J. 1982. Humus chemistry—Genesis, composition, reactions.

Thornbury, William D. 1969. Principles of geomorphology. 2nd edition.

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Department of Agriculture. National engineering handbook. (Available in the State office of the Natural Resources Conservation Service at Indianapolis, Indiana)

United States Department of Agriculture. National forestry manual. (Available in the State office of the Natural Resources Conservation Service at Indianapolis, Indiana)

United States Department of Agriculture. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

United States Department of Agriculture. 1981. Land resource regions and major land resource areas of the United States. Soil Conservation Service. U.S. Department of Agriculture Handbook 296.

United States Department of Agriculture. 1998. Field indicators of hydric soils in the United States. (Available in the State office of the Natural Resources Conservation Service in Indianapolis, Indiana)

# Glossary

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**ABC soil.** A soil having an A, a B, and a C horizon.

**Ablation till.** Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

**AC soil.** A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

**Aeration, soil.** The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

**Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

**Alluvial fan.** The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

**Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.

**Alpha,alpha-dipyridyl.** A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

**Animal unit month (AUM).** The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

**Aquic conditions.** Current soil wetness characterized by saturation, reduction, and redoximorphic features.

**Argillic horizon.** A subsoil horizon characterized by an accumulation of illuvial clay.

**Aspect.** The direction in which a slope faces.

**Association, soil.** A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

**Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the

amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low .....	0 to 3
Low .....	3 to 6
Moderate .....	6 to 9
High .....	9 to 12
Very high .....	more than 12

**Backslope.** The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

**Basal area.** The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

**Basal till.** Compact glacial till deposited beneath the ice.

**Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

**Bedding planes.** Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

**Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

**Bedrock-controlled topography.** A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

**Bisequum.** Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

**Blowout.** A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

**Bottom land.** The normal flood plain of a stream, subject to flooding.

**Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.

**Breast height.** An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

**Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

**Canopy.** The leafy crown of trees or shrubs. (See Crown.)

**Capillary water.** Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

**Catena.** A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

**Cation.** An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

**Cation-exchange capacity.** The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

**Chemical treatment.** Control of unwanted vegetation through the use of chemicals.

**Chiseling.** Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

**Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

**Clay depletions.** Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

**Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

**Claypan.** A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

**Climax plant community.** The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

**Coarse textured soil.** Sand or loamy sand.

**Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

**Cobbly soil material.** Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

**COLE (coefficient of linear extensibility).** See Linear extensibility.

**Complex slope.** Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

**Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

**Compressible** (in tables). Excessive decrease in volume of soft soil under load.

**Concretions.** Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

**Conglomerate.** A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

**Conservation cropping system.** Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses

and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

**Conservation tillage.** A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

**Consistence, soil.** Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

**Contour stripcropping.** Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

**Control section.** The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

**Coprogenous earth (sedimentary peat).** Fecal material deposited in water by aquatic organisms.

**Corrosion.** Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

**Cover crop.** A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

**Cropping system.** Growing crops according to a planned system of rotation and management practices.

**Crop residue management.** Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

**Cross-slope farming.** Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

**Crown.** The upper part of a tree or shrub, including the living branches and their foliage.

**Culmination of the mean annual increment (CMAI).** The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the

stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

**Cutbanks cave** (in tables). The walls of excavations tend to cave in or slough.

**Deferred grazing.** Postponing grazing or resting grazing land for a prescribed period.

**Dense layer** (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

**Depth, soil.** Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

**Depth to rock** (in tables). Bedrock is too near the surface for the specified use.

**Diversion (or diversion terrace).** A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

**Drainage class** (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained*. These classes are defined in the "Soil Survey Manual."

**Drainage, surface.** Runoff, or surface flow of water, from an area.

**Duff.** A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

**Ecological site.** An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

**Eluviation.** The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.



**Endosaturation.** A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

**Eolian soil material.** Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

**Ephemeral stream.** A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

**Episaturation.** A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

**Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

*Erosion* (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

*Erosion* (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

**Erosion pavement.** A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

**Escarpment.** A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

**Excess fines** (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

**Fast intake** (in tables). The rapid movement of water into the soil.

**Fertility, soil.** The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

**Fibric soil material (peat).** The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

**Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the oven-dry

weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

**Fill slope.** A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

**Fine textured soil.** Sandy clay, silty clay, or clay.

**Firebreak.** Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

**First bottom.** The normal flood plain of a stream, subject to frequent or occasional flooding.

**Flood plain.** A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

**Flow till.** Water-saturated till that has flowed slowly downhill from its original place of deposit by glacial ice. It may rest on other till, on glacial outwash, or on a glaciolacustrine deposit.

**Fluvial.** Of or pertaining to rivers; produced by river action, as a fluvial plain.

**Footslope.** The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

**Forb.** Any herbaceous plant not a grass or a sedge.

**Forest cover.** All trees and other woody plants (underbrush) covering the ground in a forest.

**Forest type.** A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

**Fragile** (in tables). A soil that is easily damaged by use or disturbance.

**Frost action** (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

**Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

**Glacial drift.** Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

**Glacial outwash.** Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

**Glacial till.** Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

**Glaciofluvial deposits.** Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

**Glaciolacustrine deposits.** Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

**Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

**Graded stripcropping.** Growing crops in strips that grade toward a protected waterway.

**Grassed waterway.** A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

**Gravel.** Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

**Gravelly soil material.** Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

**Green manure crop** (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

**Ground water.** Water filling all the unblocked pores of the material below the water table.

**Gully.** A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

**Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

**Head out.** To form a flower head.

**Head slope.** A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

**Hemic soil material (mucky peat).** Organic soil

material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

**High-residue crops.** Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

**Hill.** A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

**Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

*O horizon.*—An organic layer of fresh and decaying plant residue.

*A horizon.*—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

*E horizon.*—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

*B horizon.*—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

*C horizon.*—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

*R layer.*—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

**Humus.** The well decomposed, more or less stable part of the organic matter in mineral soils.

**Hydrologic soil groups.** Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

**Igneous rock.** Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

**Illuviation.** The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

**Impervious soil.** A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

**Infiltration.** The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

**Infiltration capacity.** The maximum rate at which water can infiltrate into a soil under a given set of conditions.

**Infiltration rate.** The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

**Intake rate.** The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2 .....	very low
0.2 to 0.4 .....	low
0.4 to 0.75 .....	moderately low
0.75 to 1.25 .....	moderate
1.25 to 1.75 .....	moderately high
1.75 to 2.5 .....	high
More than 2.5 .....	very high

**Interfluve.** An elevated area between two drainageways that sheds water to those drainageways.

**Intermittent stream.** A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

**Iron depletions.** Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

**Irrigation.** Application of water to soils to assist in production of crops. Methods of irrigation are:

*Basin.*—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

*Border.*—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

*Controlled flooding.*—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

*Corrugation.*—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

*Drip (or trickle).*—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

*Furrow.*—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

*Sprinkler.*—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

*Subirrigation.*—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

*Wild flooding.*—Water, released at high points, is allowed to flow onto an area without controlled distribution.

**Kame.** An irregular, short ridge or hill of stratified glacial drift.

**Knoll.** A small, low, rounded hill rising above adjacent landforms.

**K<sub>sat</sub>.** Saturated hydraulic conductivity. (See Permeability.)

**Lacustrine deposit.** Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

**Large stones** (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**Linear extensibility.** Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at  $1/3$ - or  $1/10$ -bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

**Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.

**Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

**Loess.** Fine grained material, dominantly of silt-sized particles, deposited by wind.

**Low-residue crops.** Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

**Low strength.** The soil is not strong enough to support loads.

**Marl.** An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

**Masses.** Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

**Mechanical treatment.** Use of mechanical equipment for seeding, brush management, and other management practices.

**Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.

**Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

**Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

**Minimum tillage.** Only the tillage essential to crop production and prevention of soil damage.

**Miscellaneous area.** An area that has little or no natural soil and supports little or no vegetation.

**Major Land Resource Area (MLRA).** Divisions of land areas based upon geographic differences in soils, climate, water resources, and land uses.

**Moderately coarse textured soil.** Coarse sandy loam, sandy loam, or fine sandy loam.

**Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.

**Mollic epipedon.** A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

**Moraine.** An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

**Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

**Mottling, soil.** Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

**Muck.** Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

**Mudstone.** Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

**Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

**Neutral soil.** A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

**Nodules.** Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

**Nose slope.** A geomorphic component of hills consisting of the projecting end (laterally convex



area) of a hillside. The overland waterflow is predominantly divergent.

**Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

**Organic matter.** Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low .....	less than 0.5 percent
Low .....	0.5 to 1.0 percent
Moderately low .....	1.0 to 2.0 percent
Moderate .....	2.0 to 4.0 percent
High .....	4.0 to 8.0 percent
Very high .....	more than 8.0 percent

**Outwash plain.** A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

**Pan.** A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

**Parent material.** The unconsolidated organic and mineral material in which soil forms.

**Peat.** Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

**Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.

**Pedisediment.** A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher lying areas of the erosion surface.

**Pedon.** The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

**Percolation.** The movement of water through the soil.

**Percolates slowly** (in tables). The slow movement of water through the soil adversely affects the specified use.

**Permeability.** The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as “saturated

hydraulic conductivity,” which is defined in the “Soil Survey Manual.” In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as “permeability.” Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow .....	0.0 to 0.01 inch
Very slow .....	0.01 to 0.06 inch
Slow .....	0.06 to 0.2 inch
Moderately slow .....	0.2 to 0.6 inch
Moderate .....	0.6 inch to 2.0 inches
Moderately rapid .....	2.0 to 6.0 inches
Rapid .....	6.0 to 20 inches
Very rapid .....	more than 20 inches

**Phase, soil.** A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

**pH value.** A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

**Piping** (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

**Pitting** (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

**Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

**Plastic limit.** The moisture content at which a soil changes from semisolid to plastic.

**Plowpan.** A compacted layer formed in the soil directly below the plowed layer.

**Ponding.** Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

**Poor filter** (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

**Poorly graded.** Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

**Poor outlets** (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

**Potential native plant community.** See Climax plant community.

**Potential rooting depth (effective rooting depth).** Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

**Prescribed burning.** Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

**Productivity, soil.** The capability of a soil for producing a specified plant or sequence of plants under specific management.

**Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.

**Proper grazing use.** Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

**Reaction, soil.** A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid .....	less than 3.5
Extremely acid .....	3.5 to 4.4
Very strongly acid .....	4.5 to 5.0
Strongly acid .....	5.1 to 5.5
Moderately acid .....	5.6 to 6.0
Slightly acid .....	6.1 to 6.5
Neutral .....	6.6 to 7.3
Slightly alkaline .....	7.4 to 7.8
Moderately alkaline .....	7.9 to 8.4
Strongly alkaline .....	8.5 to 9.0
Very strongly alkaline .....	9.1 and higher

**Redoximorphic concentrations.** Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

**Redoximorphic depletions.** Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

**Redoximorphic features.** Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

**Reduced matrix.** A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II).

The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

**Relief.** The elevations or inequalities of a land surface, considered collectively.

**Rill.** A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

**Road cut.** A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

**Rock fragments.** Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

**Rooting depth** (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

**Root zone.** The part of the soil that can be penetrated by plant roots.

**Runoff.** The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

**Sand.** As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

**Sandstone.** Sedimentary rock containing dominantly sand-sized particles.

**Sapric soil material (muck).** The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

**Saturation.** Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

**Second bottom.** The first terrace above the normal flood plain (or first bottom) of a river.

**Sedimentary rock.** Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

**Seepage** (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

**Sequum**. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

**Series, soil**. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

**Shale**. Sedimentary rock formed by the hardening of a clay deposit.

**Sheet erosion**. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

**Shoulder**. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

**Shrink-swell** (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

**Side slope**. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

**Silica**. A combination of silicon and oxygen. The mineral form is called quartz.

**Silt**. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

**Siltstone**. Sedimentary rock made up of dominantly silt-sized particles.

**Similar soils**. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

**Site index**. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

**Slope**. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In

this survey, classes for simple slopes are as follows:

Nearly level .....	0 to 2 percent
Gently sloping .....	2 to 6 percent
Moderately sloping .....	6 to 12 percent
Strongly sloping .....	12 to 18 percent
Moderately steep .....	18 to 30 percent
Steep .....	30 to 45 percent
Very steep .....	45 percent and higher

**Slope** (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

**Slow intake** (in tables). The slow movement of water into the soil.

**Slow refill** (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

**Soft bedrock**. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

**Soil**. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

**Soil separates**. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand .....	2.0 to 1.0
Coarse sand .....	1.0 to 0.5
Medium sand .....	0.5 to 0.25
Fine sand .....	0.25 to 0.10
Very fine sand .....	0.10 to 0.05
Silt .....	0.05 to 0.002
Clay .....	less than 0.002

**Solum**. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

**Stone line**. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

**Stones**. Rock fragments 10 to 24 inches (25 to 60

centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

**Stony.** Refers to a soil containing stones in numbers that interfere with or prevent tillage.

**Strippcropping.** Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

**Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

**Stubble mulch.** Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

**Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.

**Subsoiling.** Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

**Substratum.** The part of the soil below the solum.

**Subsurface layer.** Any surface soil horizon (A, E, AB, or EB) below the surface layer.

**Summit.** The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

**Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

**Surface soil.** The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

**Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

**Terminal moraine.** A belt of thick glacial drift that generally marks the termination of important glacial advances.

**Terrace.** An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

**Terrace (geologic).** An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

**Thin layer** (in tables). Otherwise suitable soil material that is too thin for the specified use.

**Till plain.** An extensive area of nearly level to undulating soils underlain by glacial till.

**Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

**Toeslope.** The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

**Topsoil.** The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

**Toxicity** (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

**Trace elements.** Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

**Unstable fill** (in tables). Risk of caving or sloughing on banks of fill material.

**Upland.** Land at a higher elevation, in general, than



the alluvial plain or stream terrace; land above the lowlands along streams.

**Varve.** A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

**Weathering.** All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

**Well graded.** Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

**Wilting point (or permanent wilting point).** The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

**Windthrow.** The uprooting and tipping over of trees by the wind.

# Tables

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Table 1.--Temperature and Precipitation  
(Recorded in the period 1961-90 at South Bend, Indiana)

Month	Temperature						Precipitation				
				2 years in 10 will have--		Average number of growing degree days*	2 years in 10 will have--			Average number of days with 0.10 inch or more	Average snowfall
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--		Average	Less than--	More than--		
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	30.3	15.9	23.1	56	-15	8	2.25	1.32	3.08	5	22.4
February----	34.0	18.6	26.3	59	-9	14	1.91	1.06	2.66	5	16.1
March-----	45.7	29.0	37.3	78	5	98	3.11	1.88	4.21	7	9.7
April-----	58.6	38.7	48.7	84	19	288	3.82	2.33	5.17	7	2.4
May-----	70.0	48.7	59.4	89	29	601	3.22	1.87	4.43	6	0.0
June-----	79.5	58.6	69.0	95	41	871	4.11	2.35	5.67	7	0.0
July-----	82.8	63.0	72.9	97	48	1,020	3.82	2.38	5.11	6	0.0
August-----	80.7	61.2	71.0	95	45	960	3.67	1.89	5.23	6	0.0
September---	74.1	54.4	64.2	91	36	727	3.62	1.40	5.49	6	0.0
October-----	62.2	43.5	52.8	84	26	404	3.08	1.68	4.32	6	1.0
November----	48.5	34.0	41.3	74	14	132	3.28	2.05	4.40	7	8.6
December----	35.3	22.3	28.8	63	-6	24	3.32	2.28	4.27	8	21.0
Yearly:											
Average----	58.5	40.7	49.6	---	---	---	---	---	---	---	---
Extreme----	104	-21	---	98	-15	---	---	---	---	---	---
Total-----	---	---	---	---	---	5,146	39.22	33.76	44.47	76	81.2

\* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.--Freeze Dates in Spring and Fall  
(Recorded in the period 1961-90 at South Bend, Indiana)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 20	May 1	May 14
2 year in 10 later than--	Apr. 15	Apr. 25	May 9
5 year in 10 later than--	Apr. 5	Apr. 15	Apr. 28
First freezing temperature in fall:			
1 yr in 10 earlier than--	Nov. 3	Oct. 14	Oct. 6
2 yr in 10 earlier than--	Nov. 8	Oct. 20	Oct. 10
5 yr in 10 earlier than--	Nov. 18	Oct. 31	Oct. 19

Table 3.--Growing Season  
(Recorded in the period 1961-90 at South Bend,  
Indiana)

Probability	Daily minimum temperature During growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	211	176	153
8 years in 10	216	183	160
5 years in 10	226	198	173
2 years in 10	237	212	186
1 year in 10	242	220	192



Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AahAK	Abscota loamy sand, 0 to 2 percent slopes, occasionally flooded, brief duration-----	1,302	0.4
AatAN	Ackerman muck, drained, 0 to 1 percent slopes-----	232	*
AbhAN	Adrian muck, drained, 0 to 1 percent slopes-----	4,894	1.7
AbhAU	Adrian muck, undrained, 0 to 1 percent slopes-----	522	0.2
ApuAN	Antung muck, drained, 0 to 1 percent slopes-----	3,350	1.1
AxvA	Auten loam, 0 to 1 percent slopes-----	4,393	1.5
BaaA	Bainter sandy loam, 0 to 1 percent slopes-----	239	*
BaaB	Bainter sandy loam, 1 to 4 percent slopes-----	232	*
BaaC2	Bainter sandy loam, 4 to 10 percent slopes, eroded-----	9	*
BbmA	Baugo silt loam, 0 to 1 percent slopes-----	3,000	1.0
BmgA	Blount silt loam, 0 to 2 percent slopes-----	658	0.2
BshA	Brady sandy loam, 0 to 1 percent slopes-----	3,301	1.1
BsxA	Brems-Morocco loamy sands, 0 to 1 percent slopes-----	716	0.2
BteA	Brems loamy sand, 0 to 1 percent slopes-----	189	*
BuuA	Brookston loam, 0 to 1 percent slopes-----	21,584	7.3
CmbAI	Cohoctah loam, 0 to 1 percent slopes, frequently flooded, brief duration-----	1,068	0.4
CnbA	Coloma sand, 0 to 2 percent slopes-----	431	0.1
CnbB	Coloma sand, 2 to 5 percent slopes-----	6,816	2.3
CnbC	Coloma sand, 5 to 10 percent slopes-----	1,580	0.5
CnbD	Coloma sand, 10 to 18 percent slopes-----	39	*
CrrA	Coupee silt loam, 0 to 1 percent slopes-----	11,473	3.9
CvdA	Crosier loam, 0 to 1 percent slopes-----	27,297	9.2
CvdB	Crosier loam, 1 to 4 percent slopes-----	2,260	0.8
CwkA	Crumstown fine sandy loam, 0 to 1 percent slopes-----	70	*
CwkB	Crumstown fine sandy loam, 1 to 5 percent slopes-----	364	0.1
DcrA	Del Rey silty clay loam, 0 to 1 percent slopes-----	1,111	0.4
EchAN	Edwards muck, drained, 0 to 1 percent slopes-----	1,533	0.5
EchAU	Edwards muck, undrained, 0 to 1 percent slopes-----	157	*
EcrAN	Edselton muck, drained, 0 to 1 percent slopes-----	531	0.2
EcrAU	Edselton muck, undrained, 0 to 1 percent slopes-----	14	*
EmeA	Elston sandy loam, 0 to 1 percent slopes-----	147	*
GczA	Gilford sandy loam, 0 to 1 percent slopes-----	8,285	2.8
GdnA	Gilford mucky sandy loam, 0 to 1 percent slopes-----	446	0.2
HfbAN	Henrietta muck, drained, 0 to 1 percent slopes-----	2,024	0.7
HfbAU	Henrietta muck, undrained, 0 to 1 percent slopes-----	3	*
HkkA	Hillsdale sandy loam, 0 to 1 percent slopes-----	347	0.1
HkkB	Hillsdale sandy loam, 1 to 5 percent slopes-----	2,887	1.0
Hknc2	Hillsdale-Oshtemo sandy loams, 5 to 10 percent slopes, eroded-----	1,418	0.5
Hknd2	Hillsdale-Oshtemo sandy loams, 10 to 18 percent slopes, eroded-----	529	0.2
Hkpc2	Hillsdale-Tracy sandy loams, 5 to 10 percent slopes, eroded-----	1,125	0.4
Hkpd2	Hillsdale-Tracy sandy loams, 10 to 18 percent slopes, eroded-----	549	0.2
HtbAN	Houghton muck, drained, 0 to 1 percent slopes-----	6,421	2.2
HtbAU	Houghton muck, undrained, 0 to 1 percent slopes-----	2,292	0.8
JaaAK	Jamestown silt loam, 0 to 1 percent slopes, occasionally flooded, brief duration-----	255	*
MfaA	Martinsville loam, 0 to 1 percent slopes-----	912	0.3
Mfab2	Martinsville loam, 1 to 5 percent slopes, eroded-----	1,046	0.4
MfaC2	Martinsville loam, 5 to 10 percent slopes, eroded-----	256	*
MfrAN	Madaus muck, drained, 0 to 1 percent slopes-----	496	0.2
MfrAU	Madaus muck, undrained, 0 to 1 percent slopes-----	13	*
MgcA	Maumee loamy sand, 0 to 1 percent slopes-----	322	0.1
MgdAN	Martisco muck, drained, 0 to 1 percent slopes-----	238	*
MhaA	Maumee loamy fine sand, 0 to 1 percent slopes-----	1,159	0.4
MhbA	Maumee mucky loamy fine sand, 0 to 1 percent slopes-----	4,331	1.5
MmbC2	Miami loam, 5 to 10 percent slopes, eroded-----	616	0.2
MmdC3	Miami clay loam, 5 to 10 percent slopes, severely eroded-----	1,935	0.7
MmdD3	Miami clay loam, 10 to 18 percent slopes, severely eroded-----	327	0.1
MouA	Milford silty clay loam, 0 to 1 percent slopes-----	4,907	1.7
MsaA	Mishawaka sandy loam, 0 to 1 percent slopes-----	3	*
MtsB2	Morley silt loam, 2 to 6 percent slopes, eroded-----	684	0.2
MtsC2	Morley silt loam, 6 to 12 percent slopes, eroded-----	277	*
MubD3	Morley silty clay loam, 12 to 18 percent slopes, severely eroded-----	264	*
MvhAN	Moston muck, drained, 0 to 1 percent slopes-----	1,423	0.5
MvhAU	Moston muck, undrained, 0 to 1 percent slopes-----	11	*

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
MvkA	Morocco loamy sand, 0 to 1 percent slopes-----	1,554	0.5
MwzAN	Muskego muck, drained, 0 to 1 percent slopes-----	380	0.1
MwzAU	Muskego muck, undrained, 0 to 1 percent slopes-----	15	*
OkrA	Oshtemo fine sandy loam, 0 to 1 percent slopes-----	178	*
OkrB	Oshtemo fine sandy loam, 1 to 5 percent slopes-----	155	*
OkrC2	Oshtemo fine sandy loam, 5 to 10 percent slopes, eroded-----	153	*
OkrD	Oshtemo fine sandy loam, 10 to 18 percent slopes-----	102	*
OlcA	Oshtemo sandy loam, 0 to 1 percent slopes-----	10,234	3.5
OlcB	Oshtemo sandy loam, 1 to 5 percent slopes-----	5,751	1.9
OlcC2	Oshtemo sandy loam, 5 to 10 percent slopes, eroded-----	1,887	0.6
OlcD	Oshtemo sandy loam, 10 to 18 percent slopes-----	267	*
OmgA	Osolo loamy sand, 0 to 1 percent slopes-----	448	0.2
PaaAN	Palms muck, drained, 0 to 1 percent slopes-----	1,658	0.6
PaaAU	Palms muck, undrained, 0 to 1 percent slopes-----	341	0.1
Pmg	Pits, gravel-----	1,204	0.4
PxlA	Psammaquents-----	111	*
Pxo	Psammments-----	843	0.3
QuiA	Quinn loam, 0 to 1 percent slopes-----	16	*
QujA	Quinn sandy loam, 0 to 1 percent slopes-----	4,966	1.7
RenA	Rensselaer mucky loam, 0 to 1 percent slopes-----	2,468	0.8
ReyA	Rensselaer loam, 0 to 1 percent slopes-----	13,658	4.6
RopA	Riddles-Oshtemo fine sandy loams, 0 to 1 percent slopes-----	1,663	0.6
RopB	Riddles-Oshtemo fine sandy loams, 1 to 5 percent slopes-----	9,443	3.2
RopC2	Riddles-Oshtemo fine sandy loams, 5 to 10 percent slopes, eroded-----	248	*
RopD2	Riddles-Oshtemo fine sandy loams, 10 to 18 percent slopes, eroded-----	148	*
RoqB	Riddles-Metea complex, 1 to 5 percent slopes-----	505	0.2
RoqC2	Riddles-Metea complex, 5 to 10 percent slopes, eroded-----	1,662	0.6
RoqD2	Riddles-Metea complex, 10 to 18 percent slopes, eroded-----	519	0.2
Sdza	Selfridge-Crosier complex, 0 to 1 percent slopes-----	797	0.3
SdzaB	Selfridge-Brems loamy sands, 1 to 4 percent slopes-----	124	*
SesA	Schoolcraft loam, 0 to 1 percent slopes-----	616	0.2
Sn1A	Southwest silt loam, 0 to 1 percent slopes-----	1,556	0.5
TmpA	Tracy sandy loam, 0 to 1 percent slopes-----	2,625	0.9
TmpB	Tracy sandy loam, 1 to 5 percent slopes-----	6,152	2.1
TmpC2	Tracy sandy loam, 5 to 10 percent slopes, eroded-----	3,419	1.2
TmpD	Tracy sandy loam, 10 to 18 percent slopes-----	1,615	0.5
TnwA	Troxel silt loam, 0 to 1 percent slopes-----	1,125	0.4
TxuA	Tyner loamy sand, 0 to 1 percent slopes-----	3,433	1.2
TxuB	Tyner loamy sand, 1 to 5 percent slopes-----	725	0.2
TxuC	Tyner loamy sand, 5 to 10 percent slopes-----	667	0.2
TxuD	Tyner loamy sand, 10 to 18 percent slopes-----	643	0.2
TxuF	Tyner loamy sand, 18 to 45 percent slopes-----	2	*
Uam	Udorthents, loamy-----	101	*
UdeA	Urban land-Bainters complex, 0 to 1 percent slopes-----	1,962	0.7
UdeB	Urban land-Bainters complex, 1 to 4 percent slopes-----	221	*
UdeC	Urban land-Bainters complex, 4 to 10 percent slopes-----	120	*
UdkA	Urban land-Brady complex, 0 to 1 percent slopes-----	268	*
UdzA	Urban land-Auten complex, 0 to 1 percent slopes-----	578	0.2
UeaA	Urban land-Crosier complex, 0 to 3 percent slopes-----	59	*
UeqA	Urban land-Gilford complex, 0 to 1 percent slopes-----	4,947	1.7
UewA	Urban land-Brems-Morocco complex, 0 to 1 percent slopes-----	1,116	0.4
UfbA	Urban land-Brookston complex, 0 to 1 percent slopes-----	14	*
UfhA	Urban land-Coloma complex, 0 to 2 percent slopes-----	1,545	0.5
UfhB	Urban land-Coloma complex, 2 to 5 percent slopes-----	1,522	0.5
UfhC	Urban land-Coloma complex, 5 to 10 percent slopes-----	812	0.3
UfmA	Urban land-Coupee complex, 0 to 1 percent slopes-----	2,119	0.7
UfrA	Urban land-Del Rey complex, 0 to 1 percent slopes-----	84	*
UftA	Urban land-Elston complex, 0 to 1 percent slopes-----	114	*
UfzA	Urban land-Mishawaka complex, 0 to 1 percent slopes-----	729	0.2
UgaA	Urban land-Morocco complex, 0 to 1 percent slopes-----	2,533	0.9
UglA	Urban land-Oslo complex, 0 to 1 percent slopes-----	903	0.3
UgrA	Urban land-Rensselaer complex, 0 to 1 percent slopes-----	141	*
UgsA	Urban land-Riddles-Oshtemo complex, 0 to 1 percent slopes-----	394	0.1

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
UgsB	Urban land-Riddles-Oshtemo complex, 1 to 5 percent slopes-----	350	0.1
UgvA	Urban land-Tyner complex, 0 to 1 percent slopes-----	21,281	7.2
UgvB	Urban land-Tyner complex, 1 to 5 percent slopes-----	2,004	0.7
UgvC	Urban land-Tyner complex, 5 to 10 percent slopes-----	1,744	0.6
UgvD	Urban land-Tyner complex, 10 to 18 percent slopes-----	722	0.2
UhmA	Urban land-Hillsdale complex, 0 to 1 percent slopes-----	26	*
UhmB	Urban land-Hillsdale-Tracy complex, 1 to 5 percent slopes-----	849	0.3
UhoC	Urban land-Hillsdale-Oshtemo complex, 5 to 10 percent slopes-----	88	*
UhoD	Urban land-Hillsdale-Oshtemo complex, 10 to 18 percent slopes-----	4	*
UhpC	Urban land-Hillsdale-Tracy complex, 5 to 10 percent slopes-----	504	0.2
UhpD	Urban land-Hillsdale-Tracy complex, 10 to 18 percent slopes-----	63	*
UhwA	Urban land-Martinsville complex, 0 to 1 percent slopes-----	485	0.2
UhwB	Urban land-Martinsville complex, 1 to 5 percent slopes-----	541	0.2
UhwC	Urban land-Martinsville complex, 5 to 10 percent slopes-----	104	*
UkaA	Urban land-Maumee complex, 0 to 1 percent slopes-----	2,243	0.8
UkeA	Urban land-Milford complex, 0 to 1 percent slopes-----	47	*
UkxA	Urban land-Oshtemo complex, 0 to 1 percent slopes-----	1,358	0.5
UkxB	Urban land-Oshtemo complex, 1 to 5 percent slopes-----	313	0.1
UkxC	Urban land-Oshtemo complex, 5 to 10 percent slopes-----	11	*
UmfB	Urban land-Riddles-Metea complex, 1 to 5 percent slopes-----	2	*
UmfC	Urban land-Riddles-Metea complex, 5 to 10 percent slopes-----	40	*
UmfD	Urban land-Riddles-Metea complex, 10 to 18 percent slopes-----	6	*
UmpA	Urban land-Schoolcraft complex, 0 to 1 percent slopes-----	965	0.3
UmuA	Urban land-Southwest complex, 0 to 1 percent slopes-----	67	*
UmwA	Urban land-Tracy complex, 0 to 1 percent slopes-----	1,333	0.5
UmwB	Urban land-Tracy complex, 1 to 5 percent slopes-----	1,664	0.6
UmwC	Urban land-Tracy complex, 5 to 10 percent slopes-----	561	0.2
UmwD	Urban land-Tracy complex, 10 to 18 percent slopes-----	108	*
UmxA	Urban land-Troxel complex, 0 to 1 percent slopes-----	130	*
UnoA	Urban land-Whitaker complex, 0 to 1 percent slopes-----	173	*
UnqB	Urban land-Williamstown-Crosier complex, 1 to 5 percent slopes-----	8	*
UntA	Urban land-Wunabuna complex, 0 to 1 percent slopes-----	5	*
Usl	Udorthents, rubbish-----	314	0.1
W	Water, unclassified-----	3,077	1.0
WcnAI	Waterford loam, 0 to 2 percent slopes, frequently flooded, long duration-----	190	*
WoaA	Williamstown loam, 0 to 1 percent slopes-----	208	*
WoaB2	Williamstown loam, 1 to 5 percent slopes, eroded-----	681	0.2
WoaC2	Williamstown loam, 5 to 10 percent slopes, eroded-----	20	*
WobB	Williamstown-Crosier loams, 1 to 5 percent slopes-----	1,356	0.5
WrxAN	Wunabuna silt loam, drained, 0 to 1 percent slopes-----	504	0.2
WtBA	Whitaker loam, 0 to 1 percent slopes-----	1,265	0.4
WujB	Williamstown-Moon complex, 1 to 5 percent slopes-----	339	0.1
	Total-----	295,424	100.0

\* Less than 0.1 percent.

Table 5.--Main Cropland and Pastureland Limitations and Hazards

(See text for a description of the limitations and hazards listed in this table.)

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
AahAK: Abscota-----	Flooding, wind erosion, low available water capacity.	Flooding, wind erosion, low available water capacity.
AatAN: Ackerman-----	Ponding, wetness, wind erosion, subsidence, moderate available water capacity, restricted permeability.	Ponding, wetness, trafficability limitation, wind erosion, subsidence.
AbhAN: Adrian-----	Ponding, wetness, wind erosion, subsidence.	Ponding, wetness, trafficability limitation, wind erosion, subsidence.
AbhAU: Adrian-----	Ponding, wetness, low pH, wind erosion, subsidence.	Ponding, wetness, trafficability limitation, low pH, wind erosion, subsidence.
ApuAN: Antung-----	Ponding, wetness, wind erosion, subsidence, moderate available water capacity.	Ponding, wetness, trafficability limitation, wind erosion, subsidence.
AxvA: Auten-----	Wetness, limited rooting depth (sand and gravel), low pH, moderate available water capacity.	Trafficability limitation, limited rooting depth (sand and gravel), low pH.
BaaA: Bainter-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
BaaB: Bainter-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
BaaC2: Bainter-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
BbmA: Baugo-----	Wetness, low pH, crusting, moderate available water capacity.	Trafficability limitation, low pH.
BmgA: Blount-----	Wetness, low pH, crusting, moderate available water capacity, restricted permeability.	Trafficability limitation, low pH.



Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
<b>BshA:</b>		
Brady-----	Wetness, low pH, wind erosion, moderate available water capacity.	Trafficability limitation, low pH, wind erosion.
<b>BsxA:</b>		
Brems-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
Morocco-----	Wetness, low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
<b>BteA:</b>		
Brems-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
<b>BuuA:</b>		
Brookston-----	Ponding, wetness.	Ponding, wetness, trafficability limitation.
<b>CmbAI:</b>		
Cohoctah-----	Flooding, wetness, high pH.	Flooding, wetness, trafficability limitation, high pH.
<b>CnbA:</b>		
Coloma-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
<b>CnbB:</b>		
Coloma-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
<b>CnbC:</b>		
Coloma-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
<b>CnbD:</b>		
Coloma-----	Equipment limitation (slope), low pH, wind erosion, low available water capacity.	Equipment limitation (slope), low pH, wind erosion, low available water capacity.
<b>CrrA:</b>		
Coupee-----	Limited rooting depth (sand and gravel), low pH, moderate available water capacity.	Limited rooting depth (sand and gravel), low pH.
<b>CvdA:</b>		
Crosier-----	Wetness, limited rooting depth (dense till), low pH, crusting, moderate available water capacity, restricted permeability.	Trafficability limitation, limited rooting depth (dense till), low pH.
<b>CvdB:</b>		
Crosier-----	Wetness, limited rooting depth (dense till), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.	Trafficability limitation, limited rooting depth (dense till), low pH, water erosion.

Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
CwkA: Crumstown-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
CwkB: Crumstown-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
DcrA: Del Rey-----	Wetness, low pH, moderate available water capacity, restricted permeability.	Trafficability limitation, low pH.
EchAN: Edwards-----	Ponding, wetness, wind erosion, subsidence, restricted permeability.	Ponding, wetness, trafficability limitation, wind erosion, subsidence.
EchAU: Edwards-----	Ponding, wetness, low pH, wind erosion, subsidence, restricted permeability.	Ponding, wetness, trafficability limitation, low pH, wind erosion, subsidence.
EcrAN: Edselton-----	Ponding, wetness, wind erosion, subsidence, restricted permeability.	Ponding, wetness, trafficability limitation, wind erosion, subsidence.
EcrAU: Edselton-----	Ponding, wetness, low pH, wind erosion, subsidence, restricted permeability.	Ponding, wetness, trafficability limitation, low pH, wind erosion, subsidence.
EmeA: Elston-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
GczA: Gilford-----	Ponding, wetness, low pH, wind erosion, moderate available water capacity.	Ponding, wetness, trafficability limitation, low pH, wind erosion.
GdnA: Gilford-----	Ponding, wetness, low pH, wind erosion, moderate available water capacity.	Ponding, wetness, trafficability limitation, low pH, wind erosion.
HfbAN: Henrietta-----	Ponding, wetness, wind erosion, subsidence.	Ponding, wetness, trafficability limitation, wind erosion, subsidence.
HfbAU: Henrietta-----	Ponding, wetness, low pH, wind erosion, subsidence.	Ponding, wetness, trafficability limitation, low pH, wind erosion, subsidence.
HkkA: Hillsdale-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.

Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
HkkB:		
Hillsdale-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
HknC2:		
Hillsdale-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
Oshtemo-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
HknD2:		
Hillsdale-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
Oshtemo-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
HkpC2:		
Hillsdale-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
Tracy-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
HkpD2:		
Hillsdale-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
Tracy-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
HtbAN:		
Houghton-----	Ponding, wetness, wind erosion, subsidence.	Ponding, wetness, trafficability limitation, wind erosion, subsidence.
HtbAU:		
Houghton-----	Ponding, wetness, low pH, wind erosion, subsidence.	Ponding, wetness, trafficability limitation, low pH, wind erosion, subsidence.
JaaAK:		
Jamestown-----	Flooding, wetness.	Flooding, trafficability limitation.
MfaA:		
Martinsville-----	Low pH, crusting.	Low pH.

Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
MfaB2: Martinsville-----	Low pH, crusting, water erosion, moderate available water capacity.	Low pH, water erosion.
MfaC2: Martinsville-----	Low pH, crusting, water erosion, moderate available water capacity.	Low pH, water erosion.
MfrAN: Madaus-----	Ponding, wetness, wind erosion, subsidence, low available water capacity, restricted permeability.	Ponding, wetness, trafficability limitation, wind erosion, low available water capacity, subsidence.
MfrAU: Madaus-----	Ponding, wetness, low pH, wind erosion, subsidence, low available water capacity, restricted permeability.	Ponding, wetness, trafficability limitation, low pH, wind erosion, low available water capacity, subsidence.
MgcA: Maumee-----	Ponding, low pH, high pH, wind erosion, low available water capacity.	Ponding, wetness, low pH, high pH, wind erosion, low available water capacity.
MgdAN: Martisco-----	Ponding, wetness, wind erosion, subsidence, low available water capacity, restricted permeability.	Ponding, wetness, trafficability limitation, wind erosion, low available water capacity, subsidence.
MhaA: Maumee-----	Ponding, wetness, low pH, high pH, wind erosion, low available water capacity.	Ponding, wetness, low pH, high pH, wind erosion, low available water capacity.
MhbA: Maumee-----	Ponding, wetness, low pH, high pH, wind erosion, low available water capacity.	Ponding, wetness, low pH, high pH, wind erosion, low available water capacity.
MmbC2: Miami-----	Limited rooting depth (dense till), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.	Limited rooting depth (dense till), low pH, water erosion.
MmdC3: Miami-----	Limited rooting depth (dense till), low pH, crusting, water erosion, low available water capacity, restricted permeability.	Limited rooting depth (dense till), low pH, water erosion, low available water capacity.



Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
<b>MmdD3:</b>		
Miami-----	Equipment limitation (slope), limited rooting depth (dense till), low pH, crusting, water erosion, low available water capacity, restricted permeability.	Equipment limitation (slope), limited rooting depth (dense till), low pH, water erosion, low available water capacity.
<b>MouA:</b>		
Milford-----	Ponding, wetness, low pH, clodding.	Ponding, wetness, trafficability limitation, low pH.
<b>MsaA:</b>		
Mishawaka-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
<b>MtsB2:</b>		
Morley-----	Limited rooting depth (dense till), low pH, crusting, water erosion, low available water capacity, restricted permeability.	Limited rooting depth (dense till), low pH, water erosion, low available water capacity.
<b>MtsC2:</b>		
Morley-----	Limited rooting depth (dense till), low pH, crusting, water erosion, low available water capacity, restricted permeability.	Limited rooting depth (dense till), low pH, water erosion, low available water capacity.
<b>MubD3:</b>		
Morley-----	Equipment limitation (slope), limited rooting depth (dense till), low pH, clodding, water erosion, low available water capacity, restricted permeability.	Equipment limitation (slope), limited rooting depth (dense till), low pH, water erosion, low available water capacity.
<b>MvhAN:</b>		
Moston-----	Ponding, wetness, wind erosion, subsidence, restricted permeability.	Ponding, wetness, trafficability limitation, wind erosion, subsidence.
<b>MvhAU:</b>		
Moston-----	Ponding, wetness, low pH, wind erosion, subsidence, restricted permeability.	Ponding, wetness, trafficability limitation, low pH, wind erosion, subsidence.
<b>MvkA:</b>		
Morocco-----	Wetness, low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
<b>MwzAN:</b>		
Muskego-----	Ponding, wetness, wind erosion, subsidence, restricted permeability.	Ponding, wetness, trafficability limitation, wind erosion, subsidence.

Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
MwzAU: Muskego-----	Ponding, wetness, low pH, wind erosion, subsidence, restricted permeability.	Ponding, wetness, trafficability limitation, low pH, wind erosion, subsidence.
OkrA: Oshtemo-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
OkrB: Oshtemo-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
OkrC2: Oshtemo-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
OkrD: Oshtemo-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
OlcA: Oshtemo-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
OlcB: Oshtemo-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
OlcC2: Oshtemo-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
OlcD: Oshtemo-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
OmgA: Osolo-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
PaaAN: Palms-----	Ponding, wetness, low pH, wind erosion, subsidence.	Ponding, wetness, trafficability limitation, low pH, wind erosion, subsidence.
PaaAU: Palms-----	Ponding, wetness, low pH, wind erosion, subsidence.	Ponding, wetness, trafficability limitation, low pH, wind erosion, subsidence.
Pmg: Pits, gravel-----	Not rated.	Not rated.

Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
PxlA: Psammaquents-----	Wetness, restricted permeability.	Trafficability limitation, very low available water capacity.
Pxo: Psammments-----	Restricted permeability.	Very low available water capacity.
QuiA: Quinn-----	Wetness, low pH, moderate available water capacity.	Wetness, trafficability limitation, low pH.
QujA: Quinn-----	Wetness, low pH, moderate available water capacity.	Wetness, trafficability limitation, low pH.
RenA: Rensselaer-----	Ponding, wetness.	Ponding, wetness, trafficability limitation.
ReyA: Rensselaer-----	Ponding, wetness.	Ponding, wetness, trafficability limitation.
RopA: Riddles-----	Low pH, wind erosion.	Low pH, wind erosion.
Oshtemo-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
RopB: Riddles-----	Low pH, water erosion, wind erosion.	Low pH, water erosion, wind erosion.
Oshtemo-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
RopC2: Riddles-----	Low pH, water erosion, wind erosion.	Low pH, water erosion, wind erosion.
Oshtemo-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
RopD2: Riddles-----	Equipment limitation (slope), low pH, water erosion, wind erosion.	Equipment limitation (slope), low pH, water erosion, wind erosion.
Oshtemo-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
RoqB: Riddles-----	Low pH, water erosion.	Low pH, water erosion.
Metea-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.

Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
RoqC2:		
Riddles-----	Low pH, water erosion.	Low pH, water erosion.
Metea-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
RoqD2:		
Riddles-----	Equipment limitation (slope), low pH, water erosion.	Equipment limitation (slope), low pH, water erosion.
Metea-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
SdzA:		
Selfridge-----	Wetness, low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
Crosier-----	Wetness, limited rooting depth (dense till), low pH, crusting, moderate available water capacity, restricted permeability.	Trafficability limitation, limited rooting depth (dense till), low pH.
SdzaB:		
Selfridge-----	Wetness, low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
Brems-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
SesA:		
Schoolcraft-----	Low pH, crusting, moderate available water capacity.	Low pH.
Sn1A:		
Southwest-----	Ponding, wetness, crusting.	Ponding, wetness, trafficability limitation.
TmpA:		
Tracy-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
TmpB:		
Tracy-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
TmpC2:		
Tracy-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
TmpD:		
Tracy-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.



Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
TnwA: Troxel-----	Low pH.	Low pH.
TxuA: Tyner-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
TxuB: Tyner-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
TxuC: Tyner-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
TxuD: Tyner-----	Equipment limitation (slope), low pH, water erosion, wind erosion, low available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion, low available water capacity.
TxuF: Tyner-----	Equipment limitation (slope), low pH, water erosion, wind erosion, low available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion, low available water capacity.
Uam: Udorthents, loamy-----	Not rated.	Not rated.
UdeA: Urban land-----	Built-up land.	Built-up land.
Bainter-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
UdeB: Urban land-----	Built-up land.	Built-up land.
Bainter-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
UdeC: Urban land-----	Built-up land.	Built-up land.
Bainter-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
UdkA: Urban land-----	Built-up land.	Built-up land.
Brady-----	Wetness, low pH, wind erosion, moderate available water capacity.	Trafficability limitation, low pH, wind erosion.
UdzA: Urban land-----	Built-up land.	Built-up land.
Auten-----	Wetness, limited rooting depth (sand and gravel), low pH, moderate available water capacity.	Trafficability limitation, limited rooting depth (sand and gravel), low pH.

Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
UeaA:		
Urban land-----	Built-up land.	Built-up land.
Crosier-----	Wetness, limited rooting depth (dense till), low pH, crusting, moderate available water capacity, restricted permeability.	Trafficability limitation, limited rooting depth (dense till), low pH.
UeqA:		
Urban land-----	Built-up land.	Built-up land.
Gilford-----	Ponding, wetness, low pH, wind erosion, moderate available water capacity.	Ponding, wetness, trafficability limitation, low pH, wind erosion.
UewA:		
Urban land-----	Built-up land.	Built-up land.
Brems-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
Morocco-----	Wetness, low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
UfbA:		
Urban land-----	Built-up land.	Built-up land.
Brookston-----	Ponding, wetness.	Ponding, wetness, trafficability limitation.
UfhA:		
Urban land-----	Built-up land.	Built-up land.
Coloma-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
UfhB:		
Urban land-----	Built-up land.	Built-up land.
Coloma-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
UfhC:		
Urban land-----	Built-up land.	Built-up land.
Coloma-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
UfmA:		
Urban land-----	Built-up land.	Built-up land.
Coupee-----	Limited rooting depth (sand and gravel), low pH, moderate available water capacity.	Limited rooting depth (sand and gravel), low pH.
UfrA:		
Urban land-----	Built-up land.	Built-up land.
Del Rey-----	Wetness, low pH, moderate available water capacity, restricted permeability.	Trafficability limitation, low pH.

Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
<b>UftA:</b>		
Urban land-----	Built-up land.	Built-up land.
Elston-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
<b>UfzA:</b>		
Urban land-----	Built-up land.	Built-up land.
Mishawaka-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
<b>UgaA:</b>		
Urban land-----	Built-up land.	Built-up land.
Morocco-----	Wetness, low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
<b>UglA:</b>		
Urban land-----	Built-up land.	Built-up land.
Osolo-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
<b>UgrA:</b>		
Urban land-----	Built-up land.	Built-up land.
Rensselaer-----	Ponding, wetness.	Ponding, wetness, trafficability limitation.
<b>UgsA:</b>		
Urban land-----	Built-up land.	Built-up land.
Riddles-----	Low pH, wind erosion.	Low pH, wind erosion.
Oshtemo-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
<b>UgsB:</b>		
Urban land-----	Built-up land.	Built-up land.
Riddles-----	Low pH, water erosion, wind erosion.	Low pH, water erosion, wind erosion.
Oshtemo-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
<b>UgvA:</b>		
Urban land-----	Built-up land.	Built-up land.
Tyner-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
<b>UgvB:</b>		
Urban land-----	Built-up land.	Built-up land.
Tyner-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.

Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
UgvC:		
Urban land-----	Built-up land.	Built-up land.
Tyner-----	Low pH, wind erosion, low available water capacity.	Low pH, wind erosion, low available water capacity.
UgvD:		
Urban land-----	Built-up land.	Built-up land.
Tyner-----	Equipment limitation (slope), low pH, water erosion, wind erosion, low available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion, low available water capacity.
UhmA:		
Urban land-----	Built-up land.	Built-up land.
Hillsdale-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
UhmB:		
Urban land-----	Built-up land.	Built-up land.
Hillsdale-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
UhoC:		
Urban land-----	Built-up land.	Built-up land.
Hillsdale-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
Oshtemo-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
UhoD:		
Urban land-----	Built-up land.	Built-up land.
Hillsdale-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
Oshtemo-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
UhpC:		
Urban land-----	Built-up land.	Built-up land.
Hillsdale-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
Tracy-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
UhpD:		
Urban land-----	Built-up land.	Built-up land.



Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
UhpD:		
Hillsdale-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
Tracy-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
UhwA:		
Urban land-----	Built-up land.	Built-up land.
Martinsville-----	Low pH, crusting.	Low pH.
UhwB:		
Urban land-----	Built-up land.	Built-up land.
Martinsville-----	Low pH, crusting, water erosion, moderate available water capacity.	Low pH, water erosion.
UhwC:		
Urban land-----	Built-up land.	Built-up land.
Martinsville-----	Low pH, crusting, water erosion, moderate available water capacity.	Low pH, water erosion.
UkaA:		
Urban land-----	Built-up land.	Built-up land.
Maumee-----	Ponding, low pH, high pH, wind erosion, low available water capacity.	Ponding, wetness, low pH, high pH, wind erosion, low available water capacity.
UkeA:		
Urban land-----	Built-up land.	Built-up land.
Milford-----	Ponding, wetness, low pH, clodding.	Ponding, wetness, trafficability limitation, low pH.
UkxA:		
Urban land-----	Built-up land.	Built-up land.
Oshtemo-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
UkxB:		
Urban land-----	Built-up land.	Built-up land.
Oshtemo-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
UkxC:		
Urban land-----	Built-up land.	Built-up land.
Oshtemo-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.

Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
UmfB:		
Urban land-----	Built-up land.	Built-up land.
Riddles-----	Low pH, water erosion.	Low pH, water erosion.
Metea-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
UmfC:		
Urban land-----	Built-up land.	Built-up land.
Riddles-----	Low pH, water erosion.	Low pH, water erosion.
Metea-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.
UmfD:		
Urban land-----	Built-up land.	Built-up land.
Riddles-----	Equipment limitation (slope), low pH, water erosion.	Equipment limitation (slope), low pH, water erosion.
Metea-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
UmpA:		
Urban land-----	Built-up land.	Built-up land.
Schoolcraft-----	Low pH, crusting, moderate available water capacity.	Low pH.
UmuA:		
Urban land-----	Built-up land.	Built-up land.
Southwest-----	Ponding, wetness, crusting.	Ponding, wetness, trafficability limitation.
UmwA:		
Urban land-----	Built-up land.	Built-up land.
Tracy-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
UmwB:		
Urban land-----	Built-up land.	Built-up land.
Tracy-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.
UmwC:		
Urban land-----	Built-up land.	Built-up land.
Tracy-----	Low pH, water erosion, wind erosion, moderate available water capacity.	Low pH, water erosion, wind erosion.

Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
UmwD:		
Urban land-----	Built-up land.	Built-up land.
Tracy-----	Equipment limitation (slope), low pH, water erosion, wind erosion, moderate available water capacity.	Equipment limitation (slope), low pH, water erosion, wind erosion.
UmxA:		
Urban land-----	Built-up land.	Built-up land.
Troxel-----	Low pH.	Low pH.
UnoA:		
Urban land-----	Built-up land.	Built-up land.
Whitaker-----	Wetness, low ph, crusting.	Trafficability limitation, low ph.
UnqB:		
Urban land-----	Built-up land.	Built-up land.
Williamstown-----	Limited rooting depth (dense till), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.	Limited rooting depth (dense till), low pH, water erosion.
Crosier-----	Wetness, limited rooting depth (dense till), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.	Trafficability limitation, limited rooting depth (dense till), low pH, water erosion.
UntA:		
Urban land-----	Built-up land.	Built-up land.
Wunabuna-----	Ponding, wetness, high pH.	Ponding, wetness, trafficability limitation, high pH.
Usl:		
Udorthents, rubbish----	Not rated.	Not rated.
W:		
Water-----	Water.	Water.
WcnAI:		
Waterford-----	Flooding, wetness, high pH, crusting, low available water capacity.	Flooding, trafficability limitation, high pH, low available water capacity.
WoaA:		
Williamstown-----	Limited rooting depth (dense till), low pH, crusting, moderate available water capacity, restricted permeability.	Limited rooting depth (dense till), low pH.

Table 5.--Main Cropland and Pastureland Limitations and Hazards--Continued

Soil name and map symbol	Cropland limitations and hazards	Pastureland limitations and hazards
WoaB2: Williamstown-----	Limited rooting depth (dense till), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.	Limited rooting depth (dense till), low pH, water erosion.
WoaC2: Williamstown-----	Limited rooting depth (dense till), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.	Limited rooting depth (dense till), low pH, water erosion.
WobB: Williamstown-----	Limited rooting depth (dense till), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.	Limited rooting depth (dense till), low pH, water erosion.
Crosier-----	Wetness, limited rooting depth (dense till), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.	Trafficability limitation, limited rooting depth (dense till), low pH, water erosion.
WrxAN: Wunabuna-----	Ponding, wetness, high pH.	Ponding, wetness, trafficability limitation, high pH.
WtbA: Whitaker-----	Wetness, low pH, crusting.	Trafficability limitation, low pH.
WujB: Williamstown-----	Limited rooting depth (dense till), low pH, crusting, water erosion, moderate available water capacity, restricted permeability.	Limited rooting depth (dense till), low pH, water erosion.
Moon-----	Low pH, wind erosion, moderate available water capacity.	Low pH, wind erosion.



Table 6.--Land Capability and Yields per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil.)

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Grass-legume hay	Pasture
		Bu	Bu	Bu	Tons	AUM*
AahAK: Abscota	4s	68	24	24	2.3	4.5
AatAN: Ackerman, drained	4w	93	33	37	3.1	6.1
AbhAN: Adrian, drained	3w	114	40	46	3.9	7.8
AbhAU: Adrian, undrained	5w	---	---	---	---	---
ApuAN: Antung, drained	3w	103	37	46	4.3	7.7
AxvA: Auten	2s	103	36	49	3.4	6.8
BaaA: Bainter	3s	89	32	36	2.9	5.9
BaaB: Bainter	3e	89	32	36	2.9	5.9
BaaC2: Bainter	3e	77	27	31	2.5	4.9
BbmA: Baugo	2w	128	45	52	4.3	8.4
BmgA: Blount	2w	106	37	48	3.6	7.1
BshA: Brady	2w	99	35	40	3.4	6.4
BsxA: Brems, Morocco	4s	67	24	30	2.2	4.3
BteA: Brems	4s	61	22	28	2.1	4.1
BuuA: Brookston	2w	142	50	63	4.7	9.4
CmbAI: Cohoctah	4w	19	7	7	0.6	1.2
CnbA: Coloma	4s	51	18	24	1.7	3.5
CnbB: Coloma	4s	47	17	21	1.6	3.1
CnbC: Coloma	6s	40	14	18	1.3	2.7

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Grass-legume hay	Pasture
		Bu	Bu	Bu	Tons	AUM*
CnbD: Coloma	6s	30	11	14	0.9	2.0
CrrA: Coupee	2s	88	31	36	2.9	5.8
CvdA: Crosier	2w	120	42	54	3.9	8.0
CvdB: Crosier	2e	121	42	54	3.9	8.1
CwkA: Crumstown	3s	94	33	42	3.1	6.1
CwkB: Crumstown	3e	94	33	42	3.1	6.1
DcrA: Del Rey	2w	109	38	48	3.6	7.3
EchAN: Edwards, drained	4w	110	39	44	3.6	7.3
EchAU: Edwards, undrained	5w	---	---	---	---	---
EcrAN: Edselton, drained	4w	111	40	45	4.6	8.1
EcrAU: Edselton, undrained	5w	---	---	---	---	---
EmeA: Elston	2s	100	36	41	4.2	7.5
GczA: Gilford	2w	121	42	50	4.0	8.1
GdnA: Gilford	2w	122	43	50	4.1	8.2
HfbAN: Henrietta, drained	2w	142	50	57	4.7	9.4
HfbAU: Henrietta, undrained	5w	---	---	---	---	---
HkkA: Hillsdale	2e	84	30	37	2.8	5.6
HkkB: Hillsdale	2s	84	30	37	2.8	5.6
HknC2: Hillsdale, Oshtemo	3e	77	27	31	2.5	5.1
HknD2: Hillsdale, Oshtemo	4e	62	22	25	2.0	4.2
HkpC2: Hillsdale, Tracy	3e	79	28	32	2.5	5.2

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Grass-legume hay	Pasture
		Bu	Bu	Bu	Tons	AUM*
HkpD2: Hillsdale, Tracy	4e	64	23	26	2.1	4.3
HtbAN: Houghton, drained	3w	127	45	51	4.2	8.4
HtbAU: Houghton, undrained	5w	---	---	---	---	---
JaaAK: Jamestown	2w	118	42	52	4.8	8.8
MfaA: Martinsville	1	113	39	46	3.7	7.5
MfaB2: Martinsville	2e	109	38	45	3.6	7.2
MfaC2: Martinsville	3e	102	36	41	3.3	6.8
MfrAN: Madaus, drained	4w	94	33	38	3.2	6.2
MfrAU: Madaus, undrained	5w	---	---	---	---	---
MgcA: Maumee	3w	110	40	50	4.6	8.2
MgdAN: Martisco, drained	4w	93	33	37	3.1	6.2
MhaA: Maumee	3w	99	35	44	3.2	6.5
MhbA: Maumee	3w	101	35	45	3.4	6.6
MmbC2: Miami	3e	94	33	42	3.1	6.1
MmdC3: Miami	4e	90	32	41	3.0	5.9
MmdD3: Miami	6e	75	26	34	2.5	5.0
MouA: Milford	2w	135	47	60	4.4	9.1
MsaA: Mishawaka	3s	72	26	32	2.4	4.7
MtsB2: Morley	2e	95	33	43	3.0	6.2
MtsC2: Morley	3e	87	31	39	2.8	5.7
MubD3: Morley	6e	66	23	30	2.2	4.4

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Grass-legume hay	Pasture
		Bu	Bu	Bu	Tons	AUM*
MvhAN: Moston, drained	4w	108	38	43	3.6	7.2
MvhAU: Moston, undrained	5w	---	---	---	---	---
MvkA: Morocco	3s	76	28	35	3.5	5.9
MwzAN: Muskego, drained	4w	113	40	45	3.7	7.4
MwzAU: Muskego, undrained	6w	---	---	---	---	---
OkrA: Oshtemo	3s	85	31	35	3.7	6.5
OkrB: Oshtemo	3s	84	30	34	2.7	5.5
OkrC2: Oshtemo	3e	75	26	30	2.5	5.0
OkrD: Oshtemo	4e	60	21	24	2.0	4.0
OlcA: Oshtemo	3s	84	30	34	2.7	5.5
OlcB: Oshtemo	3s	80	28	32	2.6	5.4
OlcC2: Oshtemo	3e	70	24	28	2.4	4.7
OlcD: Oshtemo	4e	55	19	22	1.8	3.7
OmgA: Osolo	3s	72	25	33	2.4	4.8
PaaAN: Palms, drained	3w	128	45	51	4.2	8.5
PaaAU: Palms, undrained	3w	---	---	---	---	---
Pmg. Pits, gravel						
PxlA: Psammaquents	8	---	---	---	---	---
Pxo: Psammments	8	---	---	---	---	---
QuiA: Quinn	2w	109	39	45	3.6	7.2
QujA: Quinn	2w	104	37	42	3.3	6.9

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Grass-legume hay	Pasture
		Bu	Bu	Bu	Tons	AUM*
RenA: Rensselaer	2w	147	52	59	4.8	9.8
ReyA: Rensselaer	2w	146	51	59	4.9	9.7
RopA: Riddles, Oshtemo	1	94	33	41	3.2	6.2
RopB: Riddles, Oshtemo	2e	94	33	41	3.2	6.2
RopC2: Riddles, Oshtemo	3e	89	31	39	3.1	5.9
RopD2: Riddles, Oshtemo	4e	81	28	35	2.7	5.5
RoqB: Riddles, Metea	3e	84	30	38	2.7	5.6
RoqC2: Riddles, Metea	3e	83	29	38	2.7	5.4
RoqD2: Riddles, Metea	4e	65	23	29	2.0	4.4
SdzA: Selfridge, Crosier	3w	103	36	46	3.4	6.8
SdzaB: Selfridge, Brems	3e	80	28	36	2.6	5.3
SesA: Schoolcraft	2s	115	40	47	3.9	7.6
Sn1A: Southwest	2w	136	47	55	4.5	9.2
TmpA: Tracy	2s	90	32	36	3.0	5.9
TmpB: Tracy	2e	91	32	36	3.0	6.1
TmpC2: Tracy	3e	79	28	32	2.6	5.1
TmpD: Tracy	4e	61	21	24	2.1	4.1
TnwA: Troxel	1	123	43	49	3.9	8.2
TxuA: Tyner	3s	51	18	24	1.7	3.4
TxuB: Tyner	3s	51	18	23	1.7	3.3
TxuC: Tyner	3e	42	15	19	1.4	2.6

See footnote at end of table.



Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Grass-legume hay	Pasture
		Bu	Bu	Bu	Tons	AUM*
TxuD: Tyner	4e	20	7	9	0.7	1.2
TxuF: Tyner	6e	---	---	---	---	---
Uam: Udorthents, loamy	8	---	---	---	---	---
UdeA. Urban land, Bainter						
UdeB. Urban land, Bainter						
UdeC. Urban land, Bainter						
UdkA. Urban land, Brady						
UdzA. Urban land, Auten						
UeaA. Urban land, Crosier						
UeqA. Urban land, Gilford						
UewA. Urban land, Brems, Morocco						
UfbA. Urban land, Brookston						
UfhA. Urban land, Coloma						
UfhB. Urban land, Coloma						
UfhC. Urban land, Coloma						
UfmA. Urban land, Coupee						
UfrA. Urban land, Del Rey						
UftA. Urban land, Elston						
UfzA. Urban land, Mishawaka						
UgaA. Urban land, Morocco						

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Grass-legume hay	Pasture
		Bu	Bu	Bu	Tons	AUM*
Ug1A. Urban land, Osolo						
UgrA. Urban land, Rensselaer						
UgsA. Urban land, Riddles, Oshtemo						
UgsB. Urban land, Riddles, Oshtemo						
UgvA. Urban land, Tyner						
UgvB. Urban land, Tyner						
UgvC. Urban land, Tyner						
UgvD. Urban land, Tyner						
UhmA. Urban land, Hillsdale						
UhmB. Urban land, Hillsdale						
UhoC. Urban land, Hillsdale, Oshtemo						
UhoD. Urban land, Hillsdale, Oshtemo						
UhpC. Urban land, Hillsdale, Tracy						
UhpD. Urban land, Hillsdale, Tracy						
UhwA. Urban land, Martinsville						
UhwB. Urban land, Martinsville						
UhwC. Urban land, Martinsville						

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Grass-legume hay	Pasture
		Bu	Bu	Bu	Tons	AUM*
UkaA. Urban land, Maumee						
UkeA. Urban land, Milford						
UkxA. Urban land, Oshtemo						
UkxB. Urban land, Oshtemo						
UkxC. Urban land, Oshtemo						
UmfB. Urban land, Riddles, Metea						
UmfC. Urban land, Riddles, Metea						
UmfD. Urban land, Riddles, Metea						
UmpA. Urban land, Schoolcraft						
UmuA. Urban land, Southwest						
UmwA. Urban land, Tracy						
UmwB. Urban land, Tracy						
UmwC. Urban land, Tracy						
UmwD. Urban land, Tracy						
UmxA. Urban land, Troxel						
UnoA. Urban land, Whitaker						
UnqB. Urban land, Williamstown, Crosier						
UntA. Urban land, drained, Wunabuna, drained						

See footnote at end of table.

Table 6.--Land Capability and Yields per Acre of Crops and Pasture--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Winter wheat	Grass-legume hay	Pasture
		Bu	Bu	Bu	Tons	AUM*
Usl. Udorthents, rubbish						
W. Water						
WcnAI: Waterford	5w	60	21	21	2.0	4.0
WoaA: Williamstown	1	109	38	50	3.6	7.1
WoaB2: Williamstown	2e	109	38	50	3.6	7.1
WoaC2: Williamstown	3e	101	35	46	3.3	6.7
WobB: Williamstown, Crosier	2e	111	39	50	3.6	7.3
WrxAN: Wunabuna, drained	2w	133	46	53	4.3	8.9
WtbA: Whitaker	2w	128	45	52	4.2	8.5
WujB: Williamstown, Moon	2e	98	34	45	3.2	6.4

\* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 7.--Prime Farmland

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name.)

Map symbol	Soil name
AxvA	Auten loam, 0 to 1 percent slopes (where drained)
BaaA	Bainter sandy loam, 0 to 1 percent slopes
BaaB	Bainter sandy loam, 1 to 4 percent slopes
BbmA	Baugo silt loam, 0 to 1 percent slopes (where drained)
BmgA	Blount silt loam, 0 to 2 percent slopes (where drained)
BshA	Brady sandy loam, 0 to 1 percent slopes (where drained)
BuuA	Brookston loam, 0 to 1 percent slopes (where drained)
CmbAI	Cohoctah loam, 0 to 1 percent slopes, frequently flooded, brief duration (where drained and either protected from flooding or not frequently flooded during the growing season)
CrrA	Coupee silt loam, 0 to 1 percent slopes
CvdA	Crosier loam, 0 to 1 percent slopes (where drained)
CvdB	Crosier loam, 1 to 4 percent slopes (where drained)
CwkA	Crumstown fine sandy loam, 0 to 1 percent slopes
CwkB	Crumstown fine sandy loam, 1 to 5 percent slopes
DcrA	Del Rey silty clay loam, 0 to 1 percent slopes
EmeA	Elston sandy loam, 0 to 1 percent slopes
GczA	Gilford sandy loam, 0 to 1 percent slopes (where drained)
GdnA	Gilford mucky sandy loam, 0 to 1 percent slopes (where drained)
HkkA	Hillsdale sandy loam, 0 to 1 percent slopes
HkkB	Hillsdale sandy loam, 1 to 5 percent slopes
JaaAK	Jamestown silt loam, 0 to 1 percent slopes, occasionally flooded, brief duration (where drained)
MfaA	Martinsville loam, 0 to 1 percent slopes
MfaB2	Martinsville loam, 1 to 5 percent slopes, eroded
MouA	Milford silty clay loam, 0 to 1 percent slopes (where drained)
MsaA	Mishawaka sandy loam, 0 to 1 percent slopes
MtsB2	Morley silt loam, 2 to 6 percent slopes, eroded
Okra	Oshtemo fine sandy loam, 0 to 1 percent slopes
OkraB	Oshtemo fine sandy loam, 1 to 5 percent slopes
OlcA	Oshtemo sandy loam, 0 to 1 percent slopes
OlcB	Oshtemo sandy loam, 1 to 5 percent slopes
QuiA	Quinn loam, 0 to 1 percent slopes (where drained)
QujA	Quinn sandy loam, 0 to 1 percent slopes (where drained)
RenA	Rensselaer mucky loam, 0 to 1 percent slopes (where drained)
ReyA	Rensselaer loam, 0 to 1 percent slopes (where drained)
RopA	Riddles-Oshtemo fine sandy loams, 0 to 1 percent slopes
RopB	Riddles-Oshtemo fine sandy loams, 1 to 5 percent slopes
SdzA	Selfridge-Crosier complex, 0 to 1 percent slopes
SesA	Schoolcraft loam, 0 to 1 percent slopes
Sn1A	Southwest silt loam, 0 to 1 percent slopes (where drained)
TmpA	Tracy sandy loam, 0 to 1 percent slopes
TmpB	Tracy sandy loam, 1 to 5 percent slopes
TnwA	Troxel silt loam, 0 to 1 percent slopes
WoaA	Williamstown loam, 0 to 1 percent slopes (where drained)
WoaB2	Williamstown loam, 1 to 5 percent slopes, eroded (where drained)
WobB	Williamstown-Crosier loams, 1 to 5 percent slopes (where drained)
WtbA	Whitaker loam, 0 to 1 percent slopes (where drained)
WujB	Williamstown-Moon complex, 1 to 5 percent slopes (where drained)



Table 8.--Windbreaks and Environmental Plantings

(Absence of an entry indicates that trees generally do not grow to the given height.)

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
<b>AahAK:</b>					
Abscota-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>AatAN:</b>					
Ackerman, drained-	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternateleaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>AbhAN:</b>					
Adrian, drained---	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternateleaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>AbhAU:</b>					
Adrian, undrained.					
<b>ApuAN:</b>					
Antung, drained---	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternateleaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>AxvA:</b>					
Auten-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
<b>BaaA:</b>					
<b>Bainter-----</b>	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
<b>BaaB:</b>					
<b>Bainter-----</b>	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
<b>BaaC2:</b>					
<b>Bainter-----</b>	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
<b>BbmA:</b>					
<b>Baugo-----</b>	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>BmgA:</b>					
<b>Blount-----</b>	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
<b>BshA:</b>					
<b>Brady-----</b>	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>BsxA:</b>					
<b>Brems-----</b>	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>Morocco-----</b>	American elder, black chokeberry, highbush cranberry, ninebark, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, Washington hawthorn.	Blackgum, bur oak, chinkapin oak, eastern white pine, green ash, Norway spruce.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>BteA:</b>					
<b>Brems-----</b>	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>BuuA:</b>					
<b>Brookston-----</b>	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
<b>CmbAI:</b>					
Cohoctah-----	American elder, black chokeberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, hackberry, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>CnbA:</b>					
Coloma-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>CnbB:</b>					
Coloma-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>CnbC:</b>					
Coloma-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>CnbD:</b>					
Coloma-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>CrrA:</b>					
Coupee-----	American elder, black chokeberry, common juniper, coralberry, highbush cranberry, silky dogwood.	Hazelnut, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	Eastern redcedar, hackberry, northern white- cedar, Washington hawthorn.	Blackgum, bur oak, chinkapin oak, eastern white pine, green ash, Norway spruce, red pine, white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
<b>CvdA:</b>					
Crosier-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>CvdB:</b>					
Crosier-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>CwkA:</b>					
Crumstown-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
<b>CwkB:</b>					
Crumstown-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
<b>DcrA:</b>					
Del Rey-----	American elder, black chokeberry, common winterberry, highbush blueberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.



Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
EchAN: Edwards, drained--	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternatetealeaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
EchAU: Edwards, undrained					
EcrAN: Edselton, drained	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternatetealeaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
EcrAU: Edselton, undrained.					
EmeA: Elston-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie cedar, crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
GczA: Gilford-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
GdnA: Gilford-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
<b>HfbAN:</b>					
Henrietta, drained	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternatetealeaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>HfbAU:</b>					
Henrietta, indraind-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternatetealeaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>HkkA:</b>					
Hillsdale-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
<b>HkkB:</b>					
Hillsdale-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
<b>HknC2:</b>					
Hillsdale-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
HknC2:					
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
HknD2:					
Hillsdale-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
HkpC2:					
Hillsdale-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
Tracy-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
HkpD2:					
Hillsdale-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
Tracy-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
HtbAN:					
Houghton, drained-	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternateleaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
HtbAU:					
Houghton, undrained.					
JaaAK:					
Jamestown-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
MfaA:					
Martinsville-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
<b>MfaB2:</b>					
<b>Martinsville-----</b>	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
<b>MfaC2:</b>					
<b>Martinsville-----</b>	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
<b>MfrAN:</b>					
<b>Madaus, drained---</b>	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternateteleaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>MfrAU:</b>					
<b>Madaus, undrained.</b>					
<b>MgcA:</b>					
<b>Maumee-----</b>	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>MgdAN:</b>					
<b>Martisco, drained-</b>	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternateteleaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.



Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
<b>MhaA:</b>					
Maumee-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>MhbA:</b>					
Maumee-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>MmbC2:</b>					
Miami-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazelnut, nannyberry, pawpaw, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, shingle oak, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, swamp white oak, tuliptree, white ash, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple.
<b>MmdC3:</b>					
Miami-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, black oak, eastern redcedar, hackberry, northern white- cedar, serviceberry, Washington hawthorn, chinkapin oak.	Blackgum, eastern white pine, green ash, northern red oak, Norway spruce, pin oak, red pine, swamp white oak, tuliptree, white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>MmdD3:</b>					
Miami-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, black oak, eastern redcedar, hackberry, northern white- cedar, serviceberry, Washington hawthorn, chinkapin oak.	Blackgum, eastern white pine, green ash, northern red oak, Norway spruce, pin oak, red pine, swamp white oak, tuliptree, white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
<b>MouA:</b>					
Milford-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>MsaA:</b>					
Mishawaka-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>MtsB2:</b>					
Morley-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, black oak, eastern redcedar, hackberry, northern white- cedar, serviceberry, Washington hawthorn, chinkapin oak.	Blackgum, eastern white pine, green ash, northern red oak, Norway spruce, pin oak, red pine, swamp white oak, tuliptree, white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>MtsC2:</b>					
Morley-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, black oak, eastern redcedar, hackberry, northern white- cedar, serviceberry, Washington hawthorn, chinkapin oak.	Blackgum, eastern white pine, green ash, northern red oak, Norway spruce, pin oak, red pine, swamp white oak, tuliptree, white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>MubD3:</b>					
Morley-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, black oak, eastern redcedar, hackberry, northern white- cedar, serviceberry, Washington hawthorn, chinkapin oak.	Blackgum, eastern white pine, green ash, northern red oak, Norway spruce, pin oak, red pine, swamp white oak, tuliptree, white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
MvhAN:					
Moston, drained---	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternateteleaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
MvhAU:					
Moston, undrained.					
MvkA:					
Morocco-----	American elder, black chokeberry, highbush cranberry, ninebark, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, Washington hawthorn.	Blackgum, bur oak, chinkapin oak, eastern white pine, green ash, Norway spruce.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
MwzAN:					
Muskego, drained--	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternateteleaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
MwzAU:					
Muskego, undrained					
OkrA:					
Oshemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
OkrB:					
Oshemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
OkrC2: Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
OkrD: Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
OlcA: Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
OlcB: Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
OlcC2: Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
OlcD:					
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
OmgA:					
Osolo-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
PaaAN:					
Palms, drained---	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternateteleaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
PaaAU:					
Palms, undrained--	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternateteleaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
Pmg:					
Pits, gravel.					
Px1A:					
Psammaquents.					
Pxo:					
Psamments.					
QuiA:					
Quinn-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.



Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
QujA: Quinn-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
RenA: Rensselaer-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
ReyA: Rensselaer-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
RopA: Riddles-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
RopB:					
Riddles-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
RopC2:					
Riddles-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
RopD2:					
Riddles-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
RopD2: Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
RogB: Riddles-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
Metea-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
RogC2: Riddles-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
Metea-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
RoqD2:					
Riddles-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
Metea-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
SdzA:					
Selfridge-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
Crosier-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
SdzaB:					
Selfridge-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
<b>SdzaB:</b>					
<b>Brems-----</b>	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>SesA:</b>					
<b>Schoolcraft-----</b>	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
<b>Sn1A:</b>					
<b>Southwest-----</b>	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
<b>TmpA:</b>					
<b>Tracy-----</b>	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
<b>TmpB:</b>					
<b>Tracy-----</b>	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.



Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
<b>TmpC2:</b>					
Tracy-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
<b>TmpD:</b>					
Tracy-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
<b>TnwA:</b>					
Troxel-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
<b>TxuA:</b>					
Tyner-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>TxuB:</b>					
Tyner-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
<b>TxuC:</b>					
<b>Tyner-----</b>	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>TxuD:</b>					
<b>Tyner-----</b>	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>TxuF:</b>					
<b>Tyner-----</b>	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
<b>Uam:</b>					
<b>Udorthents, loamy.</b>					
<b>UdeA:</b>					
<b>Urban land.</b>					
<b>Bainter-----</b>	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
<b>UdeB:</b>					
<b>Urban land.</b>					
<b>Bainter-----</b>	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UdeC: Urban land.					
Bainter-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UdkA: Urban land.					
Brady-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UdzA: Urban land.					
Auten-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UeaA: Urban land.					
Crosier-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UeqA: Urban land.					
Gilford-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UewA: Urban land.					
Brems-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
Morocco-----	American elder, black chokeberry, highbush cranberry, ninebark, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, Washington hawthorn.	Blackgum, bur oak, chinkapin oak, eastern white pine, green ash, Norway spruce.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UfbA: Urban land.					
Brookston-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UfhA: Urban land.					
Coloma-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UfhB: Urban land.					
Coloma-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
UfhC: Urban land.					
Coloma-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
UfmA: Urban land.					
Coupee-----	American elder, black chokeberry, common juniper, coralberry, highbush cranberry, silky dogwood.	Hazelnut, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	Eastern redcedar, hackberry, northern white- cedar, Washington hawthorn.	Blackgum, bur oak, chinkapin oak, eastern white pine, green ash, Norway spruce, red pine, white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UfrA: Urban land.					
Del Rey-----	American elder, black chokeberry, common winterberry, highbush blueberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UftA: Urban land.					
Elston-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.



Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UfzA: Urban land.					
Mishawaka-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
UgaA: Urban land.					
Morocco-----	American elder, black chokeberry, highbush cranberry, ninebark, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, Washington hawthorn.	Blackgum, bur oak, chinkapin oak, eastern white pine, green ash, Norway spruce.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UglA: Urban land.					
Osolo-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
UgrA: Urban land.					
Rensselaer-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UgsA: Urban land.					
Riddles-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UgsA:					
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UgsB:					
Urban land.					
Riddles-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UgvA:					
Urban land.					
Tyner-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
UgvB:					
Urban land.					
Tyner-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UgvC: Urban land.					
Tyner-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
UgvD: Urban land.					
Tyner-----	American elder, common juniper, coralberry, highbush cranberry, silky dogwood.	Arrowwood, blackhaw, prairie crabapple, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac.	American plum, eastern redcedar, hackberry, serviceberry, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, red maple, red pine, river birch, silver maple.	Eastern cottonwood, imperial Carolina poplar.
UhmA: Urban land.					
Hillsdale-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UhmB: Urban land.					
Hillsdale-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UhoC: Urban land.					
Hillsdale-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UhoD: Urban land.					
Hillsdale-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UhpC: Urban land.					
Hillsdale-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UhpC:					
Tracy-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UhpD:					
Urban land.					
Hillsdale-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
Tracy-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UhwA:					
Urban land.					
Martinsville-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
UhwB:					
Urban land.					
Martinsville-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.



Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
Uhwc: Urban land.					
Martinsville-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
UkaA: Urban land.					
Maumee-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UkeA: Urban land.					
Milford-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
Ukx A: Urban land.					
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UkxB: Urban land.					
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UkxC: Urban land.					
Oshtemo-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UmfB: Urban land.					
Riddles-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
Metea-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UmfC: Urban land.					
Riddles-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
Metea-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UmfD: Urban land.					
Riddles-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
Metea-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UmpA: Urban land.					
Schoolcraft-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UmuA: Urban land.					
Southwest-----	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, roughleaf dogwood.	Green hawthorn, hackberry, northern white- cedar, shingle oak.	Blackgum, bur oak, green ash, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UmwA: Urban land.					
Tracy-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UmwB: Urban land.					
Tracy-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UmwC: Urban land.					
Tracy-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UmwD: Urban land.					
Tracy-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.
UmxA: Urban land.					
Troxel-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree, white ash.
UnoA: Urban land.					
Whitaker-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UnqB: Urban land.					
Williamstown-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazelnut, nannyberry, pawpaw, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, shingle oak, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, swamp white oak, tuliptree, white ash, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple.



Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
UnqB:					
Crosier-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
UntA:					
Urban land.					
Wunabuna, drained-	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternateteleaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
Usl:					
Udorthents, rubbish.					
W:					
Water.					
WcnAI:					
Waterford-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Cockspur hawthorn, hazel alder, nannyberry, pawpaw, roughleaf dogwood.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, green ash, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
WoaA:					
Williamstown-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazelnut, nannyberry, pawpaw, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, shingle oak, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, swamp white oak, tuliptree, white ash, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
WoaB2:					
Williamstown-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur, hawthorn, hazelnut, nannyberry, pawpaw, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, shingle oak, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, swamp white oak, tuliptree, white ash, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple.
WoaC2:					
Williamstown-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur, hawthorn, hazelnut, nannyberry, pawpaw, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, shingle oak, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, swamp white oak, tuliptree, white ash, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple.
WobB:					
Williamstown-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur, hawthorn, hazelnut, nannyberry, pawpaw, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, shingle oak, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, swamp white oak, tuliptree, white ash, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple.
Crosier-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur, hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
WrxAN:					
Wunabuna, drained	American elder, black chokeberry, buttonbush, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Alternateleaf dogwood, hazel alder, nannyberry, roughleaf dogwood.	Downy hawthorn, northern white- cedar, tamarack.	Blackgum, bur oak, green ash, pin oak, swamp white oak.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
WtbA:					
Whitaker-----	American elder, black chokeberry, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazel alder, nannyberry, pawpaw, prairie crabapple, roughleaf dogwood, witchhazel.	Common persimmon, eastern redcedar, hackberry, northern white- cedar, shingle oak, tamarack, Washington hawthorn.	Blackgum, bur oak, eastern white pine, green ash, Norway spruce, pin oak, Shumard's oak, swamp white oak, white ash.	Eastern cottonwood, imperial Carolina poplar, red maple, river birch, silver maple.
WujB:					
Williamstown-----	American elder, black chokeberry, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, cockspur hawthorn, hazelnut, nannyberry, pawpaw, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, common persimmon, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, shingle oak, Washington hawthorn.	Black cherry, black walnut, blackgum, northern red oak, Norway spruce, pin oak, red pine, swamp white oak, tuliptree, white ash, white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple.
Moon-----	American elder, common juniper, coralberry, gray dogwood, highbush cranberry, ninebark, redosier dogwood, silky dogwood, spicebush.	Arrowwood, blackhaw, hazel alder, hazelnut, nannyberry, roughleaf dogwood, shining sumac, smooth sumac, staghorn sumac, wild sweet crab, witchhazel.	American plum, eastern redcedar, hackberry, northern white- cedar, prairie crabapple, serviceberry, Washington hawthorn.	Black walnut, blackgum, bur oak, northern red oak, Norway spruce, pin oak, swamp white oak.	Eastern cottonwood, eastern white pine, green ash, imperial Carolina poplar, red maple, river birch, silver maple, tuliptree.

Table 9.--Forestland Productivity

(Absence of an entry indicates that information was not available.)

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber  cu ft/ac	
AahAK: Abscota-----	---	---	---	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
AatAN: Ackerman, drained-----	red maple-----	46	29	American sycamore, bur oak, eastern cottonwood, green ash, northern white-cedar, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
AbhAN: Adrian, drained-----	red maple----- silver maple----- tamarack-----	53 78 45	29 29 29	American sycamore, bur oak, eastern cottonwood, green ash, northern white-cedar, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
AbhAU: Adrian, undrained.				
ApuAN: Antung, drained-----	green ash----- red maple----- silver maple----- tamarack-----	69 53 78 45	57 29 29 29	American sycamore, bur oak, eastern cottonwood, green ash, northern white-cedar, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber	
			cu ft/ac	
AxvA:				
Auten-----	northern red oak----	75	57	Bitternut hickory,
	tuliptree-----	95	100	blackgum, bur oak,
	white oak-----	80	57	eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.
BaaA:				
Bainter-----	---	---	---	Black cherry, black
				walnut, bur oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
BaaB:				
Bainter-----	northern red oak----	72	57	Black cherry, black
				walnut, bur oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
BaaC2:				
Bainter-----	northern red oak----	72	57	Black cherry, black
				walnut, bur oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
BbmA:				
Baugo-----	tuliptree-----	82	72	Bitternut hickory,
	white ash-----	89	114	blackgum, bur oak,
				eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.

See footnote at end of table.



Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site	Volume	
		index	of wood fiber	
			cu ft/ac	
BmgA:				
Blount-----	northern red oak----	65	43	Bitternut hickory,
	white oak-----	65	43	blackgum, bur oak,
				eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.
BshA:				
Brady-----	---	---	---	Bitternut hickory,
				blackgum, bur oak,
				eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.
BsxA:				
Brems-----	eastern white pine--	65	143	Black oak, bur oak,
	black oak-----	72	57	chinkapin oak,
				eastern
				cottonwood,
				eastern redcedar,
				eastern white
				pine, green ash,
				red pine, scarlet
				oak, shagbark
				hickory.
Morocco-----	---	---	---	Blackgum, bur oak,
				eastern
				cottonwood,
				eastern redcedar,
				green ash,
				hackberry, red
				maple, shagbark
				hickory, shingle
				oak, silver maple.
BteA:				
Brems-----	eastern white pine--	65	143	Black oak, bur oak,
	black oak-----	72	57	chinkapin oak,
				eastern
				cottonwood,
				eastern redcedar,
				eastern white
				pine, green ash,
				red pine, scarlet
				oak, shagbark
				hickory.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
BuuA: Brookston-----	pin oak-----	86	72	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
CmbAI: Cohoctah-----	green ash-----	70	72	Blackgum, bur oak,
	red maple-----	72	43	green ash, pin
	silver maple-----	95	43	oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
CnbA: Coloma-----	---	---	---	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
CnbB: Coloma-----	---	---	---	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
CnbC: Coloma-----	---	---	---	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
Cnbd: Coloma-----	---	---	---	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
CrrA: Coupee-----	---	---	---	Black oak, blackgum, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, scarlet oak, shagbark hickory, shingle oak, tuliptree, white oak.
CvdA: Crosier-----	northern red oak---- tuliptree-----	72 102	57 114	Bitternut hickory, blackgum, bur oak, eastern white pine*, green ash, northern red oak*, Shumard's oak, swamp white oak, tuliptree*, white ash, white oak*.
CvdB: Crosier-----	northern red oak---- tuliptree-----	72 102	57 114	Bitternut hickory, blackgum, bur oak, eastern white pine*, green ash, northern red oak*, Shumard's oak, swamp white oak, tuliptree*, white ash, white oak*.
CwkA: Crumstown-----	white oak----- eastern white pine--	70 85	57 200	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber	
CwkB:				
Crumstown-----	white oak-----	70	57	Black cherry, black
	eastern white pine--	85	200	walnut, bur oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
DcrA:				
Del Rey-----	northern red oak----	70	57	Bitternut hickory,
	white oak-----	70	57	blackgum, bur oak,
				eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.
EchAN:				
Edwards, drained-----	red maple-----	56	29	American sycamore,
				bur oak, eastern
				cottonwood, green
				ash, northern
				white-cedar, pin
				oak, red maple,
				shellbark hickory,
				silver maple,
				swamp white oak,
				tamarack.
EchAU:				
Edwards, undrained.				
EcrAN:				
Edselton, drained-----	red maple-----	51	29	American sycamore,
	silver maple-----	76	29	bur oak, eastern
				cottonwood, green
				ash, northern
				white-cedar, pin
				oak, red maple,
				shellbark hickory,
				silver maple,
				swamp white oak,
				tamarack.
EcrAU:				
Edselton, undrained.				

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
EmeA: Elston-----	---	---	---	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
GczA: Gilford-----	pin oak----- red maple-----	70 60	57 43	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
GdnA: Gilford-----	pin oak----- red maple-----	70 60	57 43	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
HfbAN: Henrietta, drained.				
HfbAU: Henrietta, undrained.				
HkkA: Hillsdale-----	tuliptree----- white oak-----	98 90	100 72	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
HkkB: Hillsdale-----	tuliptree----- white oak-----	98 90	100 72	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.

See footnote at end of table.



Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site	Volume	
		index	of wood fiber	
			cu ft/ac	
HknC2:				
Hillsdale-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	90	72	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
Oshtemo-----	eastern white pine--	85	200	Black cherry, black
	white oak-----	70	57	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
HknD2:				
Hillsdale-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	90	72	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
Oshtemo-----	eastern white pine--	85	200	Black cherry, black
	white oak-----	70	57	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
HkpC2:				
Hillsdale-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	90	72	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber  cu ft/ac	
HkpC2:				
Tracy-----	northern red oak----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	white oak-----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
HkpD2:				
Hillsdale-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	90	72	walnut, bur oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
Tracy-----	northern red oak----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	white oak-----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
HtbAN:				
Houghton, drained-----	silver maple-----	82	29	American sycamore,
	red maple-----	56	29	bur oak, eastern
				cottonwood, green
				ash, northern
				white-cedar, pin
				oak, red maple,
				shellbark hickory,
				silver maple,
				swamp white oak.
HtbAU:				
Houghton, undrained.				
JaaAK:				
Jamestown-----	tuliptree-----	90	86	Bitternut hickory,
				blackgum, bur oak,
				eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
MfaA:				
Martinsville-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	80	57	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
MfaB2:				
Martinsville-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	80	57	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
MfaC2:				
Martinsville-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	80	57	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
MfrAN:				
Madaus, drained-----	red maple-----	55	29	American sycamore, bur oak, eastern cottonwood, green ash, northern white-cedar, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
MfrAU:				
Madaus, undrained.				
MgcA:				
Maumee-----	pin oak-----	70	57	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
MgdAN: Martisco, drained-----	red maple-----	56	29	American sycamore, bur oak, eastern cottonwood, green ash, northern white-cedar, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
MhaA: Maumee-----	pin oak-----	70	57	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
MhbA: Maumee-----	pin oak-----	70	57	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
MmbC2: Miami-----	white oak----- tuliptree-----	90 98	72 100	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
MmdC3: Miami-----	white oak----- tuliptree-----	90 98	72 100	Black oak, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, shagbark hickory, shingle oak, tuliptree, white ash, white oak.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site	Volume	
		index	of wood fiber	
			cu ft/ac	
MmdD3:				
Miami-----	white oak-----	90	72	Black oak, bur oak,
	tuliptree-----	98	100	chinkapin oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				shingle oak,
				tuliptree, white
				ash, white oak.
MouA:				
Milford-----	---	---	---	Blackgum, bur oak,
				green ash, pin
				oak, red maple,
				shellbark hickory,
				silver maple,
				swamp white oak,
				tamarack.
MsaA:				
Mishawaka-----	black oak-----	82	57	Black oak, bur oak,
				chinkapin oak,
				eastern
				cottonwood,
				eastern redcedar,
				eastern white
				pine, green ash,
				red pine, scarlet
				oak, shagbark
				hickory.
MtsB2:				
Morley-----	northern red oak----	80	57	Black oak, bur oak,
	tuliptree-----	90	86	chinkapin oak,
	white oak-----	80	57	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				shingle oak,
				tuliptree, white
				ash, white oak.
MtsC2:				
Morley-----	northern red oak----	80	57	Black oak, bur oak,
	tuliptree-----	90	86	chinkapin oak,
	white oak-----	80	57	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				shingle oak,
				tuliptree, white
				ash, white oak.

See footnote at end of table.



Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
MubD3: Morley-----	northern red oak----	80	57	Black oak, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, shagbark hickory, shingle oak, tuliptree, white ash, white oak.
	tuliptree-----	90	86	
	white oak-----	80	57	
MvhAN: Moston, drained-----	red maple-----	51	29	American sycamore, bur oak, eastern cottonwood, green ash, northern white-cedar, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
MvhAU: Moston, undrained.				
MvkA: Morocco-----	---	---	---	Blackgum, bur oak, eastern cottonwood, eastern redcedar, green ash, hackberry, red maple, shagbark hickory, shingle oak, silver maple.
MwzAN: Muskego, drained-----	red maple-----	51	29	American sycamore, bur oak, eastern cottonwood, green ash, northern white-cedar, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
MwzAU: Muskego, undrained.				

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber	
			cu ft/ac	
OkrA: Oshtemo-----	white oak----- eastern white pine--	70 85	57 200	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
OkrB: Oshtemo-----	white oak----- eastern white pine--	70 85	57 200	
OkrC2: Oshtemo-----	white oak----- eastern white pine--	70 85	57 200	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
OkrD: Oshtemo-----	white oak----- eastern white pine--	70 85	57 200	
Olca: Oshtemo-----	eastern white pine-- jack pine----- red pine----- white oak-----	85 68 78 70	200 100 143 57	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site	Volume	
		index	of wood fiber	
			cu ft/ac	
01cB:				
Oshtemo-----	eastern white pine--	85	200	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	white oak-----	70	57	
01cC2:				
Oshtemo-----	eastern white pine--	85	200	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	white oak-----	70	57	
01cD:				
Oshtemo-----	eastern white pine--	85	200	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	white oak-----	70	57	
0mgA:				
Osolo-----	black oak-----	70	57	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
	red pine-----	70	129	
	eastern white pine--	65	143	
PaaAN:				
Palms, drained-----	silver maple-----	76	29	American sycamore, bur oak, eastern cottonwood, green ash, northern white-cedar, pin oak, red maple, shellbark hickory, silver maple, swamp white oak.
	red maple-----	51	29	

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
PaaAU: Palms, undrained-----	---	---	---	American sycamore, bur oak, eastern cottonwood, green ash, northern white-cedar, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
Pmg: Pits, gravel.				
PxlA: Psammaquents.				
Pxo: Psammments.				
QuiA: Quinn-----	pin oak-----	86	72	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
QujA: Quinn-----	pin oak-----	86	72	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
RenA: Rensselaer-----	pin oak-----	86	72	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
ReyA: Rensselaer-----	pin oak-----	86	72	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site	Volume	
		index	of wood fiber	
			cu ft/ac	
RopA:				
Riddles-----	white oak-----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	northern red oak----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
Oshtemo-----	white oak-----	70	57	Black cherry, black
	eastern white pine--	85	200	walnut, bur oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
RopB:				
Riddles-----	white oak-----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	northern red oak----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
Oshtemo-----	white oak-----	70	57	Black cherry, black
	eastern white pine--	85	200	walnut, bur oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
RopC2:				
Riddles-----	white oak-----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	northern red oak----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.

See footnote at end of table.



Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber	
			cu ft/ac	
RopC2:				
Oshtemo-----	white oak-----	70	57	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	eastern white pine--	85	200	
RopD2:				
Riddles-----	white oak-----	90	72	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	tuliptree-----	98	100	
	northern red oak---	90	72	
Oshtemo-----	white oak-----	70	57	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	eastern white pine--	85	200	
RoqB:				
Riddles-----	white oak-----	90	72	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	tuliptree-----	98	100	
	northern red oak---	90	72	
Metea-----	white oak-----	80	57	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	tuliptree-----	86	86	
	eastern white pine--	75	172	

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber	
			cu ft/ac	
RoqC2:				
Riddles-----	white oak-----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	northern red oak----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
Metea-----	white oak-----	80	57	Black cherry, black
	tuliptree-----	86	86	walnut, bur oak,
	eastern white pine--	75	172	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
RoqD2:				
Riddles-----	white oak-----	90	72	Black cherry, black
	northern red oak----	90	72	walnut, bur oak,
	tuliptree-----	98	100	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
Metea-----	white oak-----	80	57	Black cherry, black
	tuliptree-----	86	86	walnut, bur oak,
	eastern white pine--	75	172	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
SdzA:				
Selfridge-----	---	---	---	Bitternut hickory,
				blackgum, bur oak,
				eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber	
			cu ft/ac	
SdzA:				
Crosier-----	northern red oak----	72	57	Bitternut hickory,
	tuliptree-----	102	114	blackgum, bur oak,
				eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.
SdzaB:				
Selfridge-----	eastern cottonwood--	90	---	Bitternut hickory,
				blackgum, bur oak,
				eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.
Brems-----	eastern white pine--	65	143	Black oak, bur oak,
	black oak-----	72	57	chinkapin oak,
				eastern
				cottonwood,
				eastern redcedar,
				eastern white
				pine, green ash,
				red pine, scarlet
				oak, shagbark
				hickory.
SesA:				
Schoolcraft.				
Sn1A:				
Southwest-----	pin oak-----	86	72	Blackgum, bur oak,
	red maple-----	70	43	green ash, pin
				oak, red maple,
				shellbark hickory,
				silver maple,
				swamp white oak,
				tamarack.
TmpA:				
Tracy-----	northern red oak----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	white oak-----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site	Volume	
		index	of wood fiber	
			cu ft/ac	
TmpB:				
Tracy-----	northern red oak----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	white oak-----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
TmpC2:				
Tracy-----	northern red oak----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	white oak-----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
TmpD:				
Tracy-----	northern red oak----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	white oak-----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
TnwA:				
Troxel-----	---	---	---	Black cherry, black
				walnut, bur oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
TxuA:				
Tyner-----	black oak-----	74	57	Black oak, bur oak,
				chinkapin oak,
				eastern
				cottonwood,
				eastern redcedar,
				eastern white
				pine, green ash,
				red pine, scarlet
				oak, shagbark
				hickory.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
TxuB: Tyner-----	black oak-----	74	57	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
TxuC: Tyner-----	black oak-----	74	57	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
TxuD: Tyner-----	black oak-----	74	57	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
TxuF: Tyner-----	black oak-----	74	57	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
Uam: Udorthents, loamy.				

See footnote at end of table.



Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
UdeA: Urban land.				
Bainter-----	northern red oak----	72	57	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
UdeB: Urban land.				
Bainter-----	northern red oak----	72	57	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
UdeC: Urban land.				
Bainter-----	northern red oak----	72	57	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
UdkA: Urban land.				
Brady-----	---	---	---	Bitternut hickory, blackgum, bur oak, eastern white pine*, green ash, northern red oak*, Shumard's oak, swamp white oak, tuliptree*, white ash, white oak*.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
UdzA: Urban land.				
Auten-----	northern red oak----	75	57	Bitternut hickory,
	tuliptree-----	95	100	blackgum, bur oak,
	white oak-----	80	57	eastern white pine*, green ash, northern red oak*, Shumard's oak, swamp white oak, tuliptree*, white ash, white oak*.
UeaA: Urban land.				
Crosier-----	northern red oak----	72	57	Bitternut hickory,
	tuliptree-----	102	114	blackgum, bur oak, eastern white pine*, green ash, northern red oak*, Shumard's oak, swamp white oak, tuliptree*, white ash, white oak*.
UeqA: Urban land.				-
Gilford-----	pin oak-----	70	57	Blackgum, bur oak,
	red maple-----	60	43	green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
UewA: Urban land.				
Brems-----	northern red oak----	70	57	Black oak, bur oak,
	black oak-----	72	57	chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
Morocco-----	---	---	---	Blackgum, bur oak, eastern cottonwood, eastern redcedar, green ash, hackberry, red maple, shagbark hickory, shingle oak, silver maple.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site	Volume	
		index	of wood fiber	
			cu ft/ac	
UfbA: Urban land.				
Brookston-----	pin oak-----	86	72	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
UfhA: Urban land.				
Coloma-----	---	---	---	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
UfhB: Urban land.				
Coloma-----	---	---	---	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
UfhC: Urban land.				
Coloma-----	---	---	---	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber	
			cu ft/ac	
UfmA: Urban land.				
Coupee-----	---	---	---	Black oak, blackgum, bur oak, chinkapin oak, eastern white pine, green ash, northern red oak, scarlet oak, shagbark hickory, shingle oak, tuliptree, white oak.
UfrA: Urban land.				
Del Rey-----	white oak-----	70	57	Bitternut hickory, blackgum, bur oak, eastern white pine*, green ash, northern red oak*, Shumard's oak, swamp white oak, tuliptree*, white ash, white oak*.
UftA: Urban land.				
Elston-----	---	---	---	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
UfzA: Urban land.				
Mishawaka-----	black oak-----	82	57	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber	
			cu ft/ac	
UgaA: Urban land.				
Morocco-----	---	---	---	Blackgum, bur oak, eastern cottonwood, eastern redcedar, green ash, hackberry, red maple, shagbark hickory, shingle oak, silver maple.
UglA: Urban land.				
Osolo-----	black oak----- red pine----- eastern white pine--	70 70 65	57 129 143	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
UgrA: Urban land.				
Rensselaer-----	white oak----- pin oak-----	75 86	--- 72	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
UgsA: Urban land.				
Riddles-----	white oak----- tuliptree----- northern red oak----	90 98 90	72 100 72	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
Oshtemo-----	white oak----- eastern white pine--	70 85	57 200	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.

See footnote at end of table.



Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber	
			cu ft/ac	
UgsB: Urban land.				
Riddles-----	white oak-----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	northern red oak----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
Oshtemo-----	white oak-----	70	57	Black cherry, black
	eastern white pine--	85	200	walnut, bur oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
UgvA: Urban land.				
Tyner-----	black oak-----	74	57	Black oak, bur oak,
				chinkapin oak,
				eastern
				cottonwood,
				eastern redcedar,
				eastern white
				pine, green ash,
				red pine, scarlet
				oak, shagbark
				hickory.
UgvB: Urban land.				
Tyner-----	black oak-----	74	57	Black oak, bur oak,
				chinkapin oak,
				eastern
				cottonwood,
				eastern redcedar,
				eastern white
				pine, green ash,
				red pine, scarlet
				oak, shagbark
				hickory.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber	
UgvC: Urban land.				
Tyner-----	black oak-----	74	57	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
UgvD: Urban land.				
Tyner-----	black oak-----	74	57	Black oak, bur oak, chinkapin oak, eastern cottonwood, eastern redcedar, eastern white pine, green ash, red pine, scarlet oak, shagbark hickory.
UhmA: Urban land.				
Hillsdale-----	tuliptree-----	98	100	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	white oak-----	90	72	
UhmB: Urban land.				
Hillsdale-----	tuliptree-----	98	100	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	white oak-----	90	72	

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
UhoC: Urban land.				
Hillsdale-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	90	72	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
Oshtemo-----	eastern white pine--	85	200	Black cherry, black
	white oak-----	70	57	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
UhoD: Urban land.				
Hillsdale-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	90	72	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
Oshtemo-----	eastern white pine--	85	200	Black cherry, black
	white oak-----	70	57	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site	Volume	
		index	of wood fiber	
			cu ft/ac	
UhpC: Urban land.				
Hillsdale-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	90	72	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
Tracy-----	northern red oak---	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak, eastern white
	white oak-----	90	72	pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
UhpD: Urban land.				
Hillsdale-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	90	72	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
Tracy-----	northern red oak---	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak, eastern white
	white oak-----	90	72	pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
UhwA: Urban land.				
Martinsville-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	80	57	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
UhwB: Urban land.				
Martinsville-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	80	57	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
UhwC: Urban land.				
Martinsville-----	tuliptree-----	98	100	Black cherry, black
	white oak-----	80	57	walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
UkaA: Urban land.				
Maumee-----	pin oak-----	70	57	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.

See footnote at end of table.



Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site	Volume	
		index	of wood fiber	
			cu ft/ac	
UkeA: Urban land.				
Milford-----	---	---	---	Blackgum, bur oak, green ash, pin oak, red maple, shellbark hickory, silver maple, swamp white oak, tamarack.
UkxA: Urban land.				
Oshtemo-----	eastern white pine--	85	200	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	white oak-----	70	57	
UkxB: Urban land.				
Oshtemo-----	eastern white pine--	85	200	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	white oak-----	70	57	
UkxC: Urban land.				
Oshtemo-----	eastern white pine--	85	200	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	white oak-----	70	57	

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site	Volume	
		index	of wood fiber	
			cu ft/ac	
UmfB: Urban land.				
Riddles-----	white oak-----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	northern red oak----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
Metea-----	white oak-----	80	57	Black cherry, black
	tuliptree-----	86	86	walnut, bur oak,
	eastern white pine--	75	172	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
UmfC: Urban land.				
Riddles-----	white oak-----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	northern red oak----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
Metea-----	white oak-----	80	57	Black cherry, black
	tuliptree-----	86	86	walnut, bur oak,
	eastern white pine--	75	172	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
UmfD: Urban land.				
Riddles-----	white oak-----	90	72	Black cherry, black
	northern red oak---	90	72	walnut, bur oak,
	tuliptree-----	98	100	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
Metee-----	white oak-----	80	57	Black cherry, black
	tuliptree-----	86	86	walnut, bur oak,
	eastern white pine--	75	172	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
UmpA: Urban land.				
Schoolcraft.				
UmuA: Urban land.				
Southwest-----	pin oak-----	86	72	Blackgum, bur oak,
	red maple-----	70	43	green ash, pin
				oak, red maple,
				shellbark hickory,
				silver maple,
				swamp white oak,
				tamarack.
UmwA: Urban land.				
Tracy-----	northern red oak---	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	white oak-----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
UmwB: Urban land.				
Tracy-----	northern red oak----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	white oak-----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
UmwC: Urban land.				
Tracy-----	northern red oak----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	white oak-----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
UmwD: Urban land.				
Tracy-----	northern red oak----	90	72	Black cherry, black
	tuliptree-----	98	100	walnut, bur oak,
	white oak-----	90	72	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
UmxA: Urban land.				
Troxel-----	---	---	---	Black cherry, black
				walnut, bur oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
UnoA: Urban land.				
Whitaker-----	northern red oak----	75	57	Bitternut hickory,
	tuliptree-----	85	86	blackgum, bur oak,
	white oak-----	70	57	eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.
UnqB: Urban land.				
Williamstown-----	tuliptree-----	90	129	Black cherry, black
	white ash-----	90	129	walnut, bur oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
Crosier-----	northern red oak----	72	57	Bitternut hickory,
	tuliptree-----	102	114	blackgum, bur oak,
				eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.
UntA: Urban land.				
Wunabuna, drained-----	pin oak-----	86	72	American sycamore,
	silver maple-----	82	29	bur oak, eastern
				cottonwood, green
				ash, northern
				white-cedar, pin
				oak, red maple,
				shellbark hickory,
				silver maple,
				swamp white oak,
				tamarack.
Usl: Udorthents, rubbish.				
W: Water.				

See footnote at end of table.



Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
WcnAI: Waterford-----	---	---	---	Bitternut hickory, blackgum, bur oak, green ash, pin oak, shellbark hickory, Shumard's oak, swamp white oak.
WoaA: Williamstown-----	tuliptree-----	90	129	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
WoaB2: Williamstown-----	tuliptree-----	90	129	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	white ash-----	90	129	
WoaC2: Williamstown-----	tuliptree-----	90	129	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.
	white ash-----	90	129	
WobB: Williamstown-----	tuliptree-----	90	129	Black cherry, black walnut, bur oak, eastern white pine, green ash, northern red oak, shagbark hickory, Shumard's oak, sugar maple, tuliptree, white ash, white oak.

See footnote at end of table.

Table 9.--Forestland Productivity--Continued

Map symbol and soil name	Potential productivity			Trees to plant
	Local plant names	Site index	Volume of wood fiber cu ft/ac	
WobB:				
Crosier-----	northern red oak----	72	57	Bitternut hickory,
	tuliptree-----	102	114	blackgum, bur oak,
				eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.
WrxAN:				
Wunabuna, drained-----	pin oak-----	86	72	American sycamore,
	silver maple-----	82	29	bur oak, eastern
				cottonwood, green
				ash, northern
				white-cedar, pin
				oak, red maple,
				shellbark hickory,
				silver maple,
				swamp white oak,
				tamarack.
WtbA:				
Whitaker-----	northern red oak----	75	57	Bitternut hickory,
	tuliptree-----	85	86	blackgum, bur oak,
	white oak-----	70	57	eastern white
				pine*, green ash,
				northern red oak*,
				Shumard's oak,
				swamp white oak,
				tuliptree*, white
				ash, white oak*.
WujB:				
Williamstown-----	tuliptree-----	90	129	Black cherry, black
	white ash-----	90	129	walnut, bur oak,
				eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.
Moon-----	eastern white pine--	75	172	Black cherry, black
	tuliptree-----	86	86	walnut, bur oak,
	white oak-----	80	57	eastern white
				pine, green ash,
				northern red oak,
				shagbark hickory,
				Shumard's oak,
				sugar maple,
				tuliptree, white
				ash, white oak.

\* The following species, eastern white pine, northern red oak, tuliptree, and white oak are not recommended in low lying areas of these soils.

Table 10a.--Forestland Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AahAK: Abscota-----	80	Moderate: Flooding	0.50	Moderately suited: Flooding	0.50	Moderate: Strength	0.50
AatAN: Ackerman, drained---	85	Severe: Strength Wetness	1.00 1.00	Poorly suited: Ponding Strength Wetness	1.00 1.00 0.50	Severe: Strength	1.00
AbhAN: Adrian, drained----	75	Moderate: Wetness	0.75	Poorly suited: Ponding Wetness	1.00 1.00	Moderate: Strength	0.50
AbhAU: Adrian, undrained---	75	Moderate: Wetness	0.75	Poorly suited: Ponding	1.00	Moderate: Strength	0.50
ApuAN: Antung, drained----	75	Severe: Wetness	1.00	Poorly suited: Ponding Wetness	1.00 0.50	Moderate: Strength	0.50
AxvA: Auten-----	82	Moderate: Strength	0.50	Moderately suited: Wetness Strength	0.50 0.50	Severe: Strength	1.00
BaaA: Bainter-----	85	Slight		Well suited		Moderate: Strength	0.50
BaaB: Bainter-----	85	Slight		Well suited		Moderate: Strength	0.50
BaaC2: Bainter-----	85	Slight		Moderately suited: Slope	0.50	Moderate: Strength	0.50
BbmA: Baugo-----	85	Moderate: Strength	0.50	Moderately suited: Wetness Strength	0.50 0.50	Severe: Strength	1.00
BmgA: Blount-----	85	Moderate: Strength	0.50	Moderately suited: Wetness Strength	0.50 0.50	Severe: Strength	1.00
BshA: Brady-----	90	Slight		Moderately suited: Wetness	0.50	Moderate: Strength	0.50

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings	Suitability for log landings		Soil rutting hazard	
			Rating class and limiting features	Value	Rating class and limiting features	Value
BsxA:						
Brems-----	50	Slight			Moderate: Strength	0.50
Morocco-----	40	Slight			Moderate: Strength	0.50
BteA:						
Brems-----	80	Slight			Moderate: Strength	0.50
BuuA:						
Brookston-----	80	Moderate: Strength	0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength 1.00
CmbAI:						
Cohoctah-----	75	Severe: Flooding Wetness Strength	1.00 1.00 0.50	Poorly suited: Flooding Wetness Strength	1.00 0.50 0.50	Severe: Strength 1.00
CnbA:						
Coloma-----	85	Moderate: Sandiness	0.50	Moderately suited: Sandiness	0.50	Moderate: Strength 0.50
CnbB:						
Coloma-----	85	Moderate: Sandiness	0.50	Moderately suited: Sandiness	0.50	Moderate: Strength 0.50
CnbC:						
Coloma-----	85	Moderate: Sandiness	0.50	Moderately suited: Sandiness Slope	0.50 0.50	Moderate: Strength 0.50
CnbD:						
Coloma-----	85	Moderate: Sandiness	0.50	Poorly suited: Slope Sandiness	1.00 0.50	Moderate: Strength 0.50
CrrA:						
Coupee-----	85	Moderate: Strength	0.50	Moderately suited: Strength	0.50	Severe: Strength 1.00
CvdA:						
Crosier-----	85	Moderate: Strength	0.50	Moderately suited: Wetness Strength	0.50 0.50	Severe: Strength 1.00
CvdB:						
Crosier-----	80	Moderate: Strength	0.50	Moderately suited: Wetness Strength	0.50 0.50	Severe: Strength 1.00
CwkA:						
Crumstown-----	80	Slight		Well suited		Moderate: Strength 0.50

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings	Suitability for log landings		Soil rutting hazard	
			Rating class and limiting features	Value	Rating class and limiting features	Value
CwkB: Crumstown-----	80	Slight			Moderate: Strength	0.50
DcrA: Del Rey-----	85	Moderate: Strength	0.50	Moderately suited: Wetness Strength	0.50 0.50	Severe: Strength 1.00
EchAN: Edwards, drained---	80	Moderate: Wetness Strength	0.75 0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength 1.00
EchAU: Edwards, undrained--	75	Moderate: Wetness Strength	0.75 0.50	Poorly suited: Ponding Strength	1.00 0.50	Severe: Strength 1.00
EcrAN: Edselton, drained---	70	Severe: Wetness Strength	1.00 0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength 1.00
EcrAU: Edselton, undrained-	70	Severe: Wetness Strength	1.00 0.50	Poorly suited: Ponding Strength	1.00 0.50	Severe: Strength 1.00 Wetness 0.50
EmeA: Elston-----	85	Slight		Well suited	Moderate: Strength	0.50
GczA: Gilford-----	75	Slight		Poorly suited: Ponding Wetness	1.00 0.50	Moderate: Strength 0.50
GdnA: Gilford-----	75	Slight		Poorly suited: Ponding Wetness	1.00 0.50	Moderate: Strength 0.50
HfbAN: Henrietta, drained--	80	Slight		Poorly suited: Ponding	1.00	Moderate: Strength 0.50
HfbAU: Henrietta, undrained	75	Moderate: Wetness	0.75	Poorly suited: Ponding	1.00	Moderate: Strength 0.50
HkkA: Hillsdale-----	80	Slight		Well suited	Moderate: Strength	0.50
HkkB: Hillsdale-----	80	Slight		Well suited	Moderate: Strength	0.50

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings	Suitability for log landings		Soil rutting hazard	
			Rating class and limiting features	Value	Rating class and limiting features	Value
HknC2:						
Hillsdale-----	55	Slight			Moderately suited: Slope	Moderate: Strength 0.50
Oshtemo-----	30	Slight			Moderately suited: Slope	Moderate: Strength 0.50
HknD2:						
Hillsdale-----	55	Slight			Poorly suited: Slope	Moderate: Strength 0.50
Oshtemo-----	30	Slight			Poorly suited: Slope	Moderate: Strength 0.50
HkpC2:						
Hillsdale-----	55	Slight			Moderately suited: Slope	Moderate: Strength 0.50
Tracy-----	30	Slight			Moderately suited: Slope	Moderate: Strength 0.50
HkpD2:						
Hillsdale-----	55	Slight			Poorly suited: Slope	Moderate: Strength 0.50
Tracy-----	30	Slight			Poorly suited: Slope	Moderate: Strength 0.50
HtbAN:						
Houghton, drained---	75	Moderate: Wetness	0.75		Poorly suited: Ponding Wetness	Slight 1.00 1.00
HtbAU:						
Houghton, undrained-	75	Moderate: Wetness	0.75		Poorly suited: Ponding	Slight 1.00
JaaAK:						
Jamestown-----	80	Severe: Flooding Strength	1.00 0.50		Poorly suited: Flooding Wetness Strength	Severe: Strength 1.00 0.50 0.50
MfaA:						
Martinsville-----	70	Moderate: Strength	0.50		Moderately suited: Strength	Severe: Strength 1.00
MfaB2:						
Martinsville-----	70	Moderate: Strength	0.50		Moderately suited: Strength	Severe: Strength 1.00
MfaC2:						
Martinsville-----	80	Moderate: Strength	0.50		Moderately suited: Strength Slope	Severe: Strength 1.00 0.50
MfrAN:						
Madaus, drained----	80	Moderate: Wetness Strength	0.75 0.50		Poorly suited: Ponding Wetness Strength	Severe: Strength 1.00 1.00 0.50



Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MfrAU: Madaus, undrained---	75	Severe: Wetness Strength	1.00 0.50	Poorly suited: Ponding Strength	1.00 0.50	Severe: Strength Wetness	1.00 0.50
MgcA: Maumee-----	80	Slight		Poorly suited: Ponding Wetness	1.00 1.00	Moderate: Strength	0.50
MgdAN: Martisco, drained---	75	Severe: Wetness Strength	1.00 0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength	1.00
MhaA: Maumee-----	80	Severe: Wetness	1.00	Poorly suited: Ponding Wetness	1.00 1.00	Moderate: Strength	0.50
MhbA: Maumee-----	90	Severe: Wetness	1.00	Poorly suited: Ponding Wetness	1.00 1.00	Moderate: Strength	0.50
MmbC2: Miami-----	80	Moderate: Strength	0.50	Moderately suited: Strength Slope	0.50 0.50	Severe: Strength	1.00
MmdC3: Miami-----	80	Moderate: Strength	0.50	Moderately suited: Strength Slope	0.50 0.50	Severe: Strength	1.00
MmdD3: Miami-----	80	Moderate: Strength	0.50	Poorly suited: Slope Strength	1.00 0.50	Severe: Strength	1.00
MouA: Milford-----	85	Moderate: Strength	0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength	1.00
MsaA: Mishawaka-----	95	Slight		Well suited		Moderate: Strength	0.50
MtsB2: Morley-----	75	Moderate: Strength	0.50	Moderately suited: Strength	0.50	Severe: Strength	1.00
MtsC2: Morley-----	80	Moderate: Strength	0.50	Moderately suited: Slope Strength	0.50 0.50	Severe: Strength	1.00

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings	Suitability for log landings		Soil rutting hazard	
			Rating class and limiting features	Value	Rating class and limiting features	Value
MubD3: Morley-----	80	Moderate: Slope Strength	0.50 0.50	Poorly suited: Slope Strength	1.00 0.50	Severe: Strength 1.00
MvhAN: Moston, drained----	80	Severe: Strength Wetness	1.00 1.00	Poorly suited: Ponding Strength Wetness	1.00 1.00 1.00	Severe: Strength 1.00
MvhAU: Moston, undrained---	75	Severe: Strength Wetness	1.00 1.00	Poorly suited: Ponding Strength	1.00 1.00	Severe: Strength Wetness 0.50
MvkA: Morocco-----	85	Slight		Moderately suited: Wetness	0.50	Moderate: Strength 0.50
MwzAN: Muskego, drained----	75	Severe: Strength Wetness	1.00 0.75	Poorly suited: Ponding Strength Wetness	1.00 1.00 1.00	Severe: Strength 1.00
MwzAU: Muskego, undrained--	70	Severe: Strength Wetness	1.00 0.75	Poorly suited: Ponding Strength	1.00 1.00	Severe: Strength 1.00
OkrA: Oshtemo-----	80	Slight		Well suited		Moderate: Strength 0.50
OkrB: Oshtemo-----	80	Slight		Well suited		Moderate: Strength 0.50
OkrC2: Oshtemo-----	80	Slight		Moderately suited: Slope	0.50	Moderate: Strength 0.50
OkrD: Oshtemo-----	80	Slight		Poorly suited: Slope	1.00	Moderate: Strength 0.50
OlcA: Oshtemo-----	80	Slight		Well suited		Moderate: Strength 0.50
OlcB: Oshtemo-----	80	Slight		Well suited		Moderate: Strength 0.50
OlcC2: Oshtemo-----	80	Slight		Moderately suited: Slope	0.50	Moderate: Strength 0.50

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OlcD: Oshtemo-----	80	Slight		Poorly suited: Slope	1.00	Moderate: Strength	0.50
OmgA: Osolo-----	85	Slight		Well suited		Moderate: Strength	0.50
PaaAN: Palms, drained-----	80	Moderate: Strength	0.50	Poorly suited: Ponding Strength	1.00 0.50	Severe: Strength	1.00
PaaAU: Palms, undrained---	75	Moderate: Wetness Strength	0.75 0.50	Poorly suited: Ponding Strength	1.00 0.50	Severe: Strength	1.00
Pmg: Pits, gravel-----	100	Not rated		Not rated		Not rated	
PxlA: Psammaquents-----	85	Not rated		Not rated		Not rated	
Pxo: Psammments-----	85	Not rated		Not rated		Not rated	
QuiA: Quinn-----	80	Moderate: Strength	0.50	Poorly suited: Wetness Strength	1.00 0.50	Severe: Strength	1.00
QujA: Quinn-----	75	Slight		Poorly suited: Wetness	1.00	Moderate: Strength	0.50
RenA: Rensselaer-----	85	Moderate: Strength	0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength	1.00
ReyA: Rensselaer-----	75	Moderate: Strength	0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength	1.00
RopA: Riddles-----	50	Slight		Well suited		Moderate: Strength	0.50
Oshtemo-----	35	Slight		Well suited		Moderate: Strength	0.50

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RopB:							
Riddles-----	50	Slight		Well suited		Moderate: Strength	0.50
Oshtemo-----	35	Slight		Well suited		Moderate: Strength	0.50
RopC2:							
Riddles-----	50	Moderate: Strength	0.50	Moderately suited: Slope	0.50	Moderate: Strength	0.50
Oshtemo-----	35	Slight		Moderately suited: Slope	0.50	Moderate: Strength	0.50
RopD2:							
Riddles-----	50	Moderate: Strength	0.50	Poorly suited: Slope	1.00	Moderate: Strength	0.50
Oshtemo-----	35	Slight		Poorly suited: Slope	1.00	Moderate: Strength	0.50
RoqB:							
Riddles-----	55	Slight		Well suited		Moderate: Strength	0.50
Metea-----	30	Slight		Well suited		Moderate: Strength	0.50
RoqC2:							
Riddles-----	55	Moderate: Strength	0.50	Moderately suited: Slope	0.50	Moderate: Strength	0.50
Metea-----	30	Slight		Moderately suited: Slope	0.50	Moderate: Strength	0.50
RoqD2:							
Riddles-----	50	Moderate: Strength	0.50	Poorly suited: Slope	1.00	Moderate: Strength	0.50
Metea-----	30	Slight		Poorly suited: Slope	1.00	Moderate: Strength	0.50
SdzA:							
Selfridge-----	50	Slight		Well suited		Moderate: Strength	0.50
Crosier-----	35	Moderate: Strength	0.50	Moderately suited: Wetness Strength	0.50 0.50	Severe: Strength	1.00
SdzaB:							
Selfridge-----	50	Slight		Well suited		Moderate: Strength	0.50
Brems-----	35	Slight		Well suited		Moderate: Strength	0.50
SesA:							
Schoolcraft-----	80	Moderate: Strength	0.50	Moderately suited: Strength	0.50	Severe: Strength	1.00

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sn1A: Southwest-----	75	Moderate: Strength	0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength	1.00
TmpA: Tracy-----	80	Slight		Well suited		Moderate: Strength	0.50
TmpB: Tracy-----	80	Slight		Well suited		Moderate: Strength	0.50
TmpC2: Tracy-----	80	Slight		Moderately suited: Slope	0.50	Moderate: Strength	0.50
TmpD: Tracy-----	80	Slight		Poorly suited: Slope	1.00	Moderate: Strength	0.50
TnwA: Troxel-----	80	Moderate: Strength	0.50	Moderately suited: Strength	0.50	Severe: Strength	1.00
TxuA: Tyner-----	85	Slight		Well suited		Moderate: Strength	0.50
TxuB: Tyner-----	85	Slight		Well suited		Moderate: Strength	0.50
TxuC: Tyner-----	85	Slight		Moderately suited: Slope	0.50	Moderate: Strength	0.50
TxuD: Tyner-----	85	Slight		Poorly suited: Slope	1.00	Moderate: Strength	0.50
TxuF: Tyner-----	80	Severe: Slope	1.00	Poorly suited: Slope	1.00	Moderate: Strength	0.50
Uam: Udorthents, loamy---	100	Not rated		Not rated		Not rated	
UdeA: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Slight		Well suited		Moderate: Strength	0.50

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings	Suitability for log landings		Soil rutting hazard	
			Rating class and limiting features	Value	Rating class and limiting features	Value
UdeB:						
Urban land-----	50	Not rated			Not rated	
Bainter-----	40	Slight			Moderate: Strength	0.50
UdeC:						
Urban land-----	50	Not rated			Not rated	
Bainter-----	40	Slight			Moderate: Strength	0.50
UdkA:						
Urban land-----	50	Not rated			Not rated	
Brady-----	40	Slight			Moderate: Strength	0.50
UdzA:						
Urban land-----	50	Not rated			Not rated	
Auten-----	40	Moderate: Strength	0.50		Severe: Strength	1.00
UeaA:						
Urban land-----	50	Not rated			Not rated	
Crosier-----	40	Moderate: Strength	0.50		Severe: Strength	1.00
UeqA:						
Urban land-----	50	Not rated			Not rated	
Gilford-----	40	Slight			Moderate: Strength	0.50
UewA:						
Urban land-----	50	Not rated			Not rated	
Brems-----	25	Slight			Moderate: Strength	0.50
Morocco-----	15	Slight			Moderate: Strength	0.50
UfbA:						
Urban land-----	50	Not rated			Not rated	
Brookston-----	40	Moderate: Strength	0.50		Severe: Strength	1.00
UfhA:						
Urban land-----	50	Not rated			Not rated	
Coloma-----	40	Moderate: Sandiness	0.50		Moderate: Strength	0.50



Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UfhB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Moderate: Sandiness	0.50	Moderately suited: Sandiness	0.50	Moderate: Strength	0.50
UfhC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Moderate: Sandiness	0.50	Moderately suited: Sandiness Slope	0.50 0.50	Moderate: Strength	0.50
UfmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coupee-----	40	Moderate: Strength	0.50	Moderately suited: Strength	0.50	Severe: Strength	1.00
UfrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Del Rey-----	40	Moderate: Strength	0.50	Moderately suited: Wetness Strength	0.50 0.50	Severe: Strength	1.00
UftA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Elston-----	40	Slight		Well suited		Moderate: Strength	0.50
UfzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Mishawaka-----	45	Slight		Well suited		Moderate: Strength	0.50
UgaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Morocco-----	40	Slight		Moderately suited: Wetness	0.50	Moderate: Strength	0.50
UglA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Osolo-----	40	Slight		Well suited		Moderate: Strength	0.50
UgrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Rensselaer-----	40	Moderate: Strength	0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength	1.00

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings	Suitability for log landings		Soil rutting hazard	
			Rating class and limiting features	Value	Rating class and limiting features	Value
UgsA:						
Urban land-----	50	Not rated		Not rated	Not rated	
Riddles-----	25	Slight		Well suited	Moderate: Strength	0.50
Oshtemo-----	15	Slight		Well suited	Moderate: Strength	0.50
UgsB:						
Urban land-----	50	Not rated		Not rated	Not rated	
Riddles-----	25	Slight		Well suited	Moderate: Strength	0.50
Oshtemo-----	15	Slight		Well suited	Moderate: Strength	0.50
UgvA:						
Urban land-----	50	Not rated		Not rated	Not rated	
Tyner-----	40	Slight		Well suited	Moderate: Strength	0.50
UgvB:						
Urban land-----	50	Not rated		Not rated	Not rated	
Tyner-----	40	Slight		Well suited	Moderate: Strength	0.50
UgvC:						
Urban land-----	50	Not rated		Not rated	Not rated	
Tyner-----	40	Slight		Moderately suited: Slope	Moderate: Strength	0.50
UgvD:						
Urban land-----	50	Not rated		Not rated	Not rated	
Tyner-----	40	Slight		Poorly suited: Slope	Moderate: Strength	0.50
UhmA:						
Urban land-----	50	Not rated		Not rated	Not rated	
Hillsdale-----	40	Slight		Well suited	Moderate: Strength	0.50
UhmB:						
Urban land-----	50	Not rated		Not rated	Not rated	
Hillsdale-----	40	Slight		Well suited	Moderate: Strength	0.50
UhoC:						
Urban land-----	50	Not rated		Not rated	Not rated	
Hillsdale-----	30	Slight		Moderately suited: Slope	Moderate: Strength	0.50

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings	Suitability for log landings		Soil rutting hazard	
			Rating class and limiting features	Value	Rating class and limiting features	Value
UhoC:						
Oshtemo-----	15	Slight			Moderately suited: Slope	0.50
					Moderate: Strength	0.50
UhoD:						
Urban land-----	50	Not rated			Not rated	
Hillsdale-----	30	Slight			Poorly suited: Slope	1.00
					Moderate: Strength	0.50
Oshtemo-----	15	Slight			Poorly suited: Slope	1.00
					Moderate: Strength	0.50
UhpC:						
Urban land-----	50	Not rated			Not rated	
Hillsdale-----	30	Slight			Moderately suited: Slope	0.50
					Moderate: Strength	0.50
Tracy-----	15	Slight			Moderately suited: Slope	0.50
					Moderate: Strength	0.50
UhpD:						
Urban land-----	50	Not rated			Not rated	
Hillsdale-----	30	Slight			Poorly suited: Slope	1.00
					Moderate: Strength	0.50
Tracy-----	15	Slight			Poorly suited: Slope	1.00
					Moderate: Strength	0.50
UhwA:						
Urban land-----	50	Not rated			Not rated	
Martinsville-----	40	Moderate: Strength	0.50		Moderately suited: Strength	0.50
					Severe: Strength	1.00
UhwB:						
Urban land-----	50	Not rated			Not rated	
Martinsville-----	40	Moderate: Strength	0.50		Moderately suited: Strength	0.50
					Severe: Strength	1.00
UhwC:						
Urban land-----	50	Not rated			Not rated	
Martinsville-----	40	Moderate: Strength	0.50		Moderately suited: Strength Slope	0.50 0.50
					Severe: Strength	1.00
UkaA:						
Urban land-----	50	Not rated			Not rated	
Maumee-----	40	Slight			Poorly suited: Ponding Wetness	1.00 1.00
					Moderate: Strength	0.50

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UkeA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Milford-----	40	Moderate: Strength	0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength	1.00
UkxA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Slight		Well suited		Moderate: Strength	0.50
UkxB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Slight		Well suited		Moderate: Strength	0.50
UkxC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Slight		Moderately suited: Slope	0.50	Moderate: Strength	0.50
UmfB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Slight		Well suited		Moderate: Strength	0.50
Metea-----	15	Slight		Well suited		Moderate: Strength	0.50
UmfC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Moderate: Strength	0.50	Moderately suited: Slope	0.50	Moderate: Strength	0.50
Metea-----	15	Slight		Moderately suited: Slope	0.50	Moderate: Strength	0.50
UmfD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Moderate: Strength	0.50	Poorly suited: Slope	1.00	Moderate: Strength	0.50
Metea-----	15	Slight		Poorly suited: Slope	1.00	Moderate: Strength	0.50
UmpA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Schoolcraft-----	40	Moderate: Strength	0.50	Moderately suited: Strength	0.50	Severe: Strength	1.00

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings	Suitability for log landings		Soil rutting hazard	
			Rating class and limiting features	Value	Rating class and limiting features	Value
UmuA:						
Urban land-----	50	Not rated			Not rated	
Southwest-----	40	Moderate: Strength	0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength 1.00
UmwA:						
Urban land-----	50	Not rated		Not rated	Not rated	
Tracy-----	40	Slight		Well suited	Moderate: Strength	0.50
UmwB:						
Urban land-----	50	Not rated		Not rated	Not rated	
Tracy-----	40	Slight		Well suited	Moderate: Strength	0.50
UmwC:						
Urban land-----	50	Not rated		Not rated	Not rated	
Tracy-----	40	Slight		Moderately suited: Slope	0.50 Moderate: Strength	0.50
UmwD:						
Urban land-----	50	Not rated		Not rated	Not rated	
Tracy-----	40	Slight		Poorly suited: Slope	1.00 Moderate: Strength	0.50
UmxA:						
Urban land-----	50	Not rated		Not rated	Not rated	
Troxel-----	40	Moderate: Strength	0.50	Moderately suited: Strength	0.50 Severe: Strength	1.00
UnoA:						
Urban land-----	50	Not rated		Not rated	Not rated	
Whitaker-----	40	Moderate: Strength	0.50	Moderately suited: Wetness Strength	0.50 0.50 Severe: Strength	1.00
UnqB:						
Urban land-----	50	Not rated		Not rated	Not rated	
Williamstown-----	25	Moderate: Strength	0.50	Moderately suited: Strength	0.50 Severe: Strength	1.00
Crosier-----	15	Moderate: Strength	0.50	Moderately suited: Wetness Strength	0.50 0.50 Severe: Strength	1.00

Table 10a.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings	Suitability for log landings		Soil rutting hazard	
			Rating class and limiting features	Value	Rating class and limiting features	Value
UntA:						
Urban land-----	50	Not rated			Not rated	
Wunabuna, drained---	40	Moderate: Strength	0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength 1.00
Usl:						
Udorthents, rubbish-	100	Not rated		Not rated		Not rated
W:						
Water-----	100	Not rated		Not rated		Not rated
WcnAI:						
Waterford-----	80	Severe: Flooding Strength	1.00 0.50	Poorly suited: Flooding Wetness Strength	1.00 0.50 0.50	Severe: Strength 1.00
WoaA:						
Williamstown-----	85	Moderate: Strength	0.50	Moderately suited: Strength	0.50	Severe: Strength 1.00
WoaB2:						
Williamstown-----	85	Moderate: Strength	0.50	Moderately suited: Strength	0.50	Severe: Strength 1.00
WoaC2:						
Williamstown-----	80	Moderate: Strength	0.50	Moderately suited: Strength Slope	0.50 0.50	Severe: Strength 1.00
WobB:						
Williamstown-----	50	Moderate: Strength	0.50	Moderately suited: Strength	0.50	Severe: Strength 1.00
Crosier-----	30	Moderate: Strength	0.50	Moderately suited: Wetness Strength	0.50 0.50	Severe: Strength 1.00
WrxAN:						
Wunabuna, drained---	85	Moderate: Strength	0.50	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50	Severe: Strength 1.00
WtbA:						
Whitaker-----	75	Moderate: Strength	0.50	Moderately suited: Wetness Strength	0.50 0.50	Severe: Strength 1.00
WujB:						
Williamstown-----	45	Moderate: Strength	0.50	Moderately suited: Strength	0.50	Severe: Strength 1.00
Moon-----	40	Slight		Well suited		Moderate: Strength 0.50



Table 10b.--Forestland Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AahAK: Abscota-----	80	Slight		Slight		Moderately suited: Flooding	0.50
AatAN: Ackerman, drained---	85	Slight		Slight		Poorly suited: Ponding Strength Wetness	1.00 1.00 0.50
AbhAN: Adrian, drained----	75	Histosol-Not rated Histosol taxonomic order	1.00	Histosol-Not rated Histosol taxonomic order	1.00	Poorly suited: Ponding Wetness	1.00 1.00
AbhAU: Adrian, undrained---	75	Histosol-Not rated Histosol taxonomic order	1.00	Histosol-Not rated Histosol taxonomic order	1.00	Poorly suited: Ponding	1.00
ApuAN: Antung, drained----	75	Slight		Slight		Poorly suited: Ponding Wetness	1.00 0.50
AxvA: Auten-----	82	Slight		Slight		Moderately suited: Wetness Strength	0.50 0.50
BaaA: Bainter-----	85	Slight		Slight		Well suited	
BaaB: Bainter-----	85	Slight		Slight		Well suited	
BaaC2: Bainter-----	85	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope	0.50
BbmA: Baugo-----	85	Slight		Slight		Moderately suited: Wetness Strength	0.50 0.50
BmgA: Blount-----	85	Slight		Slight		Moderately suited: Wetness Strength	0.50 0.50
BshA: Brady-----	90	Slight		Slight		Moderately suited: Wetness	0.50
BsxA: Brems-----	50	Slight		Slight		Well suited	

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion	Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
			Rating class and limiting features	Value	Rating class and limiting features	Value
BsxA: Morocco-----	40	Slight		Slight	Moderately suited: Wetness	0.50
BteA: Brems-----	80	Slight		Slight	Well suited	
BuuA: Brookston-----	80	Slight		Slight	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50
CmbAI: Cohoctah-----	75	Slight		Slight	Poorly suited: Flooding Wetness Strength	1.00 0.50 0.50
CnbA: Coloma-----	85	Slight		Slight	Moderately suited: Sandiness	0.50
CnbB: Coloma-----	85	Slight		Slight	Moderately suited: Sandiness	0.50
CnbC: Coloma-----	85	Slight		Moderate: Slope/erodibility	Moderately suited: Sandiness Slope	0.50 0.50
CnbD: Coloma-----	85	Slight		Moderate: Slope/erodibility	Poorly suited: Slope Sandiness	1.00 0.50
CrrA: Coupee-----	85	Slight		Slight	Moderately suited: Strength	0.50
CvdA: Crosier-----	85	Slight		Slight	Moderately suited: Wetness Strength	0.50 0.50
CvdB: Crosier-----	80	Slight		Moderate: Slope/erodibility	Moderately suited: Wetness Strength	0.50 0.50
CwkA: Crumstown-----	80	Slight		Slight	Well suited	
CwkB: Crumstown-----	80	Slight		Slight	Well suited	
DcrA: Del Rey-----	85	Slight		Slight	Moderately suited: Wetness Strength	0.50 0.50

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EchAN: Edwards, drained----	80	Histosol-Not rated Histosol taxonomic order	1.00	Histosol-Not rated Histosol taxonomic order	1.00	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50
EchAU: Edwards, undrained--	75	Histosol-Not rated Histosol taxonomic order	1.00	Histosol-Not rated Histosol taxonomic order	1.00	Poorly suited: Ponding Strength	1.00 0.50
EcrAN: Edselton, drained---	70	Histosol-Not rated Histosol taxonomic order	1.00	Histosol-Not rated Histosol taxonomic order	1.00	Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50
EcrAU: Edselton, undrained-	70	Histosol-Not rated Histosol taxonomic order	1.00	Histosol-Not rated Histosol taxonomic order	1.00	Poorly suited: Ponding Strength	1.00 0.50
EmeA: Elston-----	85	Slight		Slight		Well suited	
GczA: Gilford-----	75	Slight		Slight		Poorly suited: Ponding Wetness	1.00 0.50
GdnA: Gilford-----	75	Slight		Slight		Poorly suited: Ponding Wetness	1.00 0.50
HfbAN: Henrietta, drained--	80	Slight		Slight		Poorly suited: Ponding	1.00
HfbAU: Henrietta, undrained	75	Slight		Slight		Poorly suited: Ponding	1.00
HkkA: Hillsdale-----	80	Slight		Slight		Well suited	
HkkB: Hillsdale-----	80	Slight		Slight		Well suited	
HknC2: Hillsdale-----	55	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope	0.50
Oshtemo-----	30	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope	0.50

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion	Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
			Rating class and limiting features	Value	Rating class and limiting features	Value
HknD2: Hillsdale-----	55	Slight			Moderate: Slope/erodibility	0.50
					Poorly suited: Slope	1.00
Oshtemo-----	30	Slight			Moderate: Slope/erodibility	0.50
					Poorly suited: Slope	1.00
HkpC2: Hillsdale-----	55	Slight			Moderate: Slope/erodibility	0.50
					Moderately suited: Slope	0.50
Tracy-----	30	Slight			Moderate: Slope/erodibility	0.50
					Moderately suited: Slope	0.50
HkpD2: Hillsdale-----	55	Slight			Moderate: Slope/erodibility	0.50
					Poorly suited: Slope	1.00
Tracy-----	30	Slight			Severe Slope/erodibility	0.95
					Poorly suited: Slope	1.00
HtbAN: Houghton, drained---	75	Histosol-Not rated			Poorly suited:	
		Histosol	1.00	Histosol	Ponding	1.00
		taxonomic order		taxonomic order	Wetness	1.00
HtbAU: Houghton, undrained-	75	Histosol-Not rated			Poorly suited:	
		Histosol	1.00	Histosol	Ponding	1.00
		taxonomic order		taxonomic order		
JaaAK: Jamestown-----	80	Slight			Poorly suited:	
					Flooding	1.00
					Wetness	0.50
					Strength	0.50
MfaA: Martinsville-----	70	Slight			Moderately suited:	
					Strength	0.50
MfaB2: Martinsville-----	70	Slight			Moderate: Slope/erodibility	0.50
					Moderately suited: Strength	0.50
MfaC2: Martinsville-----	80	Slight			Moderate: Slope/erodibility	0.50
					Moderately suited: Strength	0.50
					Slope	0.50
MfrAN: Madaus, drained----	80	Slight			Poorly suited:	
					Ponding	1.00
					Wetness	1.00
					Strength	0.50
MfrAU: Madaus, undrained---	75	Slight			Poorly suited:	
					Ponding	1.00
					Strength	0.50

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion	Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
			Rating class and limiting features	Value	Rating class and limiting features	Value
MgcA:						
Maumee-----	80	Slight		Slight	Poorly suited:	
					Ponding	1.00
					Wetness	1.00
MgdAN:						
Martisco, drained---	75	Slight		Slight	Poorly suited:	
					Ponding	1.00
					Wetness	1.00
					Strength	0.50
MhaA:						
Maumee-----	80	Slight		Slight	Poorly suited:	
					Ponding	1.00
					Wetness	1.00
MhbA:						
Maumee-----	90	Slight		Slight	Poorly suited:	
					Ponding	1.00
					Wetness	1.00
MmbC2:						
Miami-----	80	Slight		Moderate:	Moderately suited:	
				Slope/erodibility	Strength	0.50
					Slope	0.50
MmdC3:						
Miami-----	80	Slight		Moderate:	Moderately suited:	
				Slope/erodibility	Strength	0.50
					Slope	0.50
MmdD3:						
Miami-----	80	Slight		Severe	Poorly suited:	
				Slope/erodibility	Slope	1.00
					Strength	0.50
MouA:						
Milford-----	85	Slight		Slight	Poorly suited:	
					Ponding	1.00
					Wetness	1.00
					Strength	0.50
MsaA:						
Mishawaka-----	95	Slight		Slight	Well suited	
MtsB2:						
Morley-----	75	Slight		Moderate:	Moderately suited:	
				Slope/erodibility	Strength	0.50
MtsC2:						
Morley-----	80	Slight		Severe	Moderately suited:	
				Slope/erodibility	Slope	0.50
					Strength	0.50
MubD3:						
Morley-----	80	Moderate:		Severe	Poorly suited:	
		Slope/erodibility	0.50	Slope/erodibility	Slope	1.00
					Strength	0.50

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion	Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
			Rating class and limiting features	Value	Rating class and limiting features	Value
MvhAN: Moston, drained----	80	Histosol-Not rated Histosol taxonomic order	1.00	Histosol-Not rated Histosol taxonomic order	1.00	Poorly suited: Ponding Strength Wetness 1.00 1.00 1.00
MvhAU: Moston, undrained---	75	Histosol-Not rated Histosol taxonomic order	1.00	Histosol-Not rated Histosol taxonomic order	1.00	Poorly suited: Ponding Strength 1.00 1.00
MvkA: Morocco-----	85	Slight		Slight		Moderately suited: Wetness 0.50
MwzAN: Muskego, drained---	75	Histosol-Not rated Histosol taxonomic order	1.00	Histosol-Not rated Histosol taxonomic order	1.00	Poorly suited: Ponding Strength Wetness 1.00 1.00 1.00
MwzAU: Muskego, undrained--	70	Histosol-Not rated Histosol taxonomic order	1.00	Histosol-Not rated Histosol taxonomic order	1.00	Poorly suited: Ponding Strength 1.00 1.00
OkrA: Oshtemo-----	80	Slight		Slight		Well suited
OkrB: Oshtemo-----	80	Slight		Slight		Well suited
OkrC2: Oshtemo-----	80	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope 0.50
OkrD: Oshtemo-----	80	Slight		Moderate: Slope/erodibility	0.50	Poorly suited: Slope 1.00
OlcA: Oshtemo-----	80	Slight		Slight		Well suited
OlcB: Oshtemo-----	80	Slight		Slight		Well suited
OlcC2: Oshtemo-----	80	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope 0.50
OlcD: Oshtemo-----	80	Slight		Moderate: Slope/erodibility	0.50	Poorly suited: Slope 1.00
OmgA: Osolo-----	85	Slight		Slight		Well suited
PaaAN: Palms, drained-----	80	Histosol-Not rated Histosol taxonomic order	1.00	Histosol-Not rated Histosol taxonomic order	1.00	Poorly suited: Ponding Strength 0.50



Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion	Value	Hazard of erosion on roads and trails	Value	Suitability for roads (natural surface)	
						Rating class and limiting features	Value
PaaAU: Palms, undrained----	75	Histosol-Not rated Histosol taxonomic order	1.00	Histosol-Not rated Histosol taxonomic order	1.00	Poorly suited: Ponding Strength	1.00 0.50
Pmg: Pits, gravel-----	100	Not rated		Not rated		Not rated	
Px1A: Psammaquents-----	85	Not rated		Not rated		Not rated	
Pxo: Psammments-----	85	Not rated		Not rated		Not rated	
QuiA: Quinn-----	80	Slight		Slight		Poorly suited: Wetness Strength	1.00 0.50
QujA: Quinn-----	75	Slight		Slight		Poorly suited: Wetness	1.00
RenA: Rensselaer-----	85	Slight		Slight		Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50
ReyA: Rensselaer-----	75	Slight		Slight		Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50
RopA: Riddles-----	50	Slight		Slight		Well suited	
Oshtemo-----	35	Slight		Slight		Well suited	
RopB: Riddles-----	50	Slight		Moderate: Slope/erodibility	0.50	Well suited	
Oshtemo-----	35	Slight		Slight		Well suited	
RopC2: Riddles-----	50	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope	0.50
Oshtemo-----	35	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope	0.50
RopD2: Riddles-----	50	Slight		Severe Slope/erodibility	0.95	Poorly suited: Slope	1.00
Oshtemo-----	35	Slight		Moderate: Slope/erodibility	0.50	Poorly suited: Slope	1.00

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RoqB:							
Riddles-----	55	Slight		Moderate: Slope/erodibility	0.50	Well suited	
Metea-----	30	Slight		Slight		Well suited	
RoqC2:							
Riddles-----	55	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope	0.50
Metea-----	30	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope	0.50
RoqD2:							
Riddles-----	50	Slight		Severe Slope/erodibility	0.95	Poorly suited: Slope	1.00
Metea-----	30	Slight		Moderate: Slope/erodibility	0.50	Poorly suited: Slope	1.00
SdzA:							
Selfridge-----	50	Slight		Slight		Well suited	
Crosier-----	35	Slight		Slight		Moderately suited: Wetness Strength	0.50 0.50
SdzaB:							
Selfridge-----	50	Slight		Slight		Well suited	
Brems-----	35	Slight		Slight		Well suited	
SesA:							
Schoolcraft-----	80	Slight		Slight		Moderately suited: Strength	0.50
Sn1A:							
Southwest-----	75	Slight		Slight		Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50
TmpA:							
Tracy-----	80	Slight		Slight		Well suited	
TmpB:							
Tracy-----	80	Slight		Moderate: Slope/erodibility	0.50	Well suited	
TmpC2:							
Tracy-----	80	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope	0.50
TmpD:							
Tracy-----	80	Slight		Severe Slope/erodibility	0.95	Poorly suited: Slope	1.00
TnwA:							
Troxel-----	80	Slight		Slight		Moderately suited: Strength	0.50

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TxuA: Tyner-----	85	Slight		Slight		Well suited	
TxuB: Tyner-----	85	Slight		Slight		Well suited	
TxuC: Tyner-----	85	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope	0.50
TxuD: Tyner-----	85	Slight		Moderate: Slope/erodibility	0.50	Poorly suited: Slope	1.00
TxuF: Tyner-----	80	Moderate: Slope/erodibility	0.50	Severe Slope/erodibility	0.95	Poorly suited: Slope	1.00
Uam: Udorthents, loamy---	100	Not rated		Not rated		Not rated	
UdeA: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Slight		Slight		Well suited	
UdeB: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Slight		Slight		Well suited	
UdeC: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope	0.50
UdkA: Urban land-----	50	Not rated		Not rated		Not rated	
Brady-----	40	Slight		Slight		Moderately suited: Wetness	0.50
UdzA: Urban land-----	50	Not rated		Not rated		Not rated	
Auten-----	40	Slight		Slight		Moderately suited: Wetness Strength	0.50 0.50
UeaA: Urban land-----	50	Not rated		Not rated		Not rated	
Crosier-----	40	Slight		Slight		Moderately suited: Wetness Strength	0.50 0.50

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UeqA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Gilford-----	40	Slight		Slight		Poorly suited: Ponding	1.00
						Wetness	0.50
UewA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brems-----	25	Slight		Slight		Well suited	
Morocco-----	15	Slight		Slight		Moderately suited: Wetness	0.50
UfbA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brookston-----	40	Slight		Slight		Poorly suited: Ponding	1.00
						Wetness	1.00
						Strength	0.50
UfhA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Slight		Slight		Moderately suited: Sandiness	0.50
UfhB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Slight		Slight		Moderately suited: Sandiness	0.50
UfhC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Sandiness	0.50
						Slope	0.50
UfmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coupee-----	40	Slight		Slight		Moderately suited: Strength	0.50
UfrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Del Rey-----	40	Slight		Slight		Moderately suited: Wetness	0.50
						Strength	0.50
UftA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Elston-----	40	Slight		Slight		Well suited	

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UfzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Mishawaka-----	45	Slight		Slight		Well suited	
UgaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Morocco-----	40	Slight		Slight		Moderately suited: Wetness	0.50
UglA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Osolo-----	40	Slight		Slight		Well suited	
UgrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Rensselaer-----	40	Slight		Slight		Poorly suited: Ponding Wetness Strength	1.00 1.00 0.50
UgsA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Slight		Slight		Well suited	
Oshtemo-----	15	Slight		Slight		Well suited	
UgsB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Slight		Moderate: Slope/erodibility	0.50	Well suited	
Oshtemo-----	15	Slight		Slight		Well suited	
UgvA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Slight		Slight		Well suited	
UgvB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Slight		Slight		Well suited	
UgvC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope	0.50
UgvD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Slight		Moderate: Slope/erodibility	0.50	Poorly suited: Slope	1.00

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion	Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
			Rating class and limiting features	Value	Rating class and limiting features	Value
UhmA:						
Urban land-----	50	Not rated			Not rated	
Hillsdale-----	40	Slight			Well suited	
UhmB:						
Urban land-----	50	Not rated			Not rated	
Hillsdale-----	40	Slight			Well suited	
UhoC:						
Urban land-----	50	Not rated			Not rated	
Hillsdale-----	30	Slight			Moderately suited:	
					Slope	0.50
Oshtemo-----	15	Slight			Moderately suited:	
					Slope	0.50
UhoD:						
Urban land-----	50	Not rated			Not rated	
Hillsdale-----	30	Slight			Poorly suited:	
					Slope	1.00
Oshtemo-----	15	Slight			Poorly suited:	
					Slope	1.00
UhpC:						
Urban land-----	50	Not rated			Not rated	
Hillsdale-----	30	Slight			Moderately suited:	
					Slope	0.50
Tracy-----	15	Slight			Moderately suited:	
					Slope	0.50
UhpD:						
Urban land-----	50	Not rated			Not rated	
Hillsdale-----	30	Slight			Poorly suited:	
					Slope	1.00
Tracy-----	15	Slight			Poorly suited:	
					Slope	1.00
UhwA:						
Urban land-----	50	Not rated			Not rated	
Martinsville-----	40	Slight			Moderately suited:	
					Strength	0.50
UhwB:						
Urban land-----	50	Not rated			Not rated	
Martinsville-----	40	Slight			Moderately suited:	
					Strength	0.50



Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion	Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
			Rating class and limiting features	Value	Rating class and limiting features	Value
UhwC:						
Urban land-----	50	Not rated			Not rated	
Martinsville-----	40	Slight			Moderately suited:	
					Strength	0.50
					Slope	0.50
UkaA:						
Urban land-----	50	Not rated			Not rated	
Maumee-----	40	Slight			Poorly suited:	
					Ponding	1.00
					Wetness	1.00
UkeA:						
Urban land-----	50	Not rated			Not rated	
Milford-----	40	Slight			Poorly suited:	
					Ponding	1.00
					Wetness	1.00
					Strength	0.50
Ukx A:						
Urban land-----	50	Not rated			Not rated	
Oshtemo-----	40	Slight			Well suited	
Ukx B:						
Urban land-----	50	Not rated			Not rated	
Oshtemo-----	40	Slight			Well suited	
Ukx C:						
Urban land-----	50	Not rated			Not rated	
Oshtemo-----	40	Slight			Moderately suited:	
					Slope	0.50
Umf B:						
Urban land-----	50	Not rated			Not rated	
Riddles-----	25	Slight			Well suited	
Metea-----	15	Slight			Well suited	
Umf C:						
Urban land-----	50	Not rated			Not rated	
Riddles-----	25	Slight			Moderately suited:	
					Slope	0.50
Metea-----	15	Slight			Moderately suited:	
					Slope	0.50
Umf D:						
Urban land-----	50	Not rated			Not rated	
Riddles-----	25	Slight			Poorly suited:	
					Slope	1.00

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UmfD: Metea-----	15	Slight		Moderate: Slope/erodibility	0.50	Poorly suited: Slope	1.00
UmpA: Urban land-----	50	Not rated		Not rated		Not rated	
Schoolcraft-----	40	Slight		Slight		Moderately suited: Strength	0.50
UmaA: Urban land-----	50	Not rated		Not rated		Not rated	
Southwest-----	40	Slight		Slight		Poorly suited: Ponding	1.00
						Wetness	1.00
						Strength	0.50
UmwA: Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Slight		Slight		Well suited	
UmwB: Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Slight		Moderate: Slope/erodibility	0.50	Well suited	
UmwC: Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Slope	0.50
UmwD: Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Slight		Severe Slope/erodibility	0.95	Poorly suited: Slope	1.00
UmxA: Urban land-----	50	Not rated		Not rated		Not rated	
Troxel-----	40	Slight		Slight		Moderately suited: Strength	0.50
UnoA: Urban land-----	50	Not rated		Not rated		Not rated	
Whitaker-----	40	Slight		Slight		Moderately suited: Wetness	0.50
						Strength	0.50
UnqB: Urban land-----	50	Not rated		Not rated		Not rated	
Williamstown-----	25	Slight		Moderate: Slope/erodibility	0.50	Moderately suited: Strength	0.50

Table 10b.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion	Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
			Rating class and limiting features	Value	Rating class and limiting features	Value
UnqB: Crosier-----	15	Slight			Moderate: Slope/erodibility	0.50
					Moderately suited: Wetness	0.50
					Strength	0.50
UntA: Urban land-----	50	Not rated		Not rated		Not rated
Wunabuna, drained---	40	Slight		Slight		Poorly suited:
					Ponding	1.00
					Wetness	1.00
					Strength	0.50
Usl: Udorthents, rubbish-	100	Not rated		Not rated		Not rated
W: Water-----	100	Not rated		Not rated		Not rated
WcnAI: Waterford-----	80	Slight		Slight		Poorly suited:
					Flooding	1.00
					Wetness	0.50
					Strength	0.50
WoaA: Williamstown-----	85	Slight		Slight		Moderately suited:
					Strength	0.50
WoaB2: Williamstown-----	85	Slight		Moderate: Slope/erodibility	0.50	Moderately suited:
					Strength	0.50
WoaC2: Williamstown-----	80	Slight		Moderate: Slope/erodibility	0.50	Moderately suited:
					Strength	0.50
					Slope	0.50
WobB: Williamstown-----	50	Slight		Moderate: Slope/erodibility	0.50	Moderately suited:
					Strength	0.50
Crosier-----	30	Slight		Moderate: Slope/erodibility	0.50	Moderately suited:
					Wetness	0.50
					Strength	0.50
WrxAN: Wunabuna, drained---	85	Slight		Slight		Poorly suited:
					Ponding	1.00
					Wetness	1.00
					Strength	0.50
WtbA: Whitaker-----	75	Slight		Slight		Moderately suited:
					Wetness	0.50
					Strength	0.50
WujB: Williamstown-----	45	Slight		Moderate: Slope/erodibility	0.50	Moderately suited:
					Strength	0.50
Moon-----	40	Slight		Slight		Well suited

Table 10c.--Forestland Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AahAK: Abscota-----	80	Well suited		Well suited		Well suited	
AatAN: Ackerman, drained---	85	Poorly suited: Wetness Sandiness	0.75 0.50	Poorly suited: Wetness Sandiness	0.75 0.50	Poorly suited: Strength Wetness	1.00 1.00
AbhAN: Adrian, drained----	75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75
AbhAU: Adrian, undrained---	75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75
ApuAN: Antung, drained----	75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	1.00
AxvA: Auten-----	82	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
BaaA: Bainter-----	85	Well suited		Well suited		Well suited	
BaaB: Bainter-----	85	Well suited		Well suited		Well suited	
BaaC2: Bainter-----	85	Well suited		Moderately suited: Slope	0.50	Well suited	
BbmA: Baugo-----	85	Well suited		Well suited		Moderately suited: Strength	0.50
BmgA: Blount-----	85	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
BshA: Brady-----	90	Well suited		Well suited		Well suited	
BsxA: Brems-----	50	Well suited		Well suited		Well suited	
Morocco-----	40	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50	Well suited	
BteA: Brems-----	80	Well suited		Well suited		Well suited	

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BuuA: Brookston-----	80	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
CmbAI: Cohoctah-----	75	Well suited		Well suited		Poorly suited: Wetness Strength	1.00 0.50
CnbA: Coloma-----	85	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50
CnbB: Coloma-----	85	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50
CnbC: Coloma-----	85	Moderately suited: Sandiness	0.50	Moderately suited: Slope Sandiness	0.50 0.50	Moderately suited: Sandiness	0.50
CnbD: Coloma-----	85	Moderately suited: Sandiness	0.50	Moderately suited: Slope Sandiness	0.50 0.50	Moderately suited: Sandiness	0.50
CrrA: Coupee-----	85	Well suited		Well suited		Moderately suited: Strength	0.50
CvdA: Crosier-----	85	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
CvdB: Crosier-----	80	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
CwkA: Crumstown-----	80	Well suited		Well suited		Well suited	
CwkB: Crumstown-----	80	Well suited		Well suited		Well suited	
DcrA: Del Rey-----	85	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
EchAN: Edwards, drained----	80	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness Strength	0.75 0.50
EchAU: Edwards, undrained--	75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness Strength	0.75 0.50

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EcrAN: Edselton, drained---	70	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness Strength	1.00 0.50
EcrAU: Edselton, undrained-	70	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness Strength	1.00 0.50
EmeA: Elston-----	85	Well suited		Well suited		Well suited	
GczA: Gilford-----	75	Well suited		Well suited		Well suited	
GdnA: Gilford-----	75	Well suited		Well suited		Well suited	
HfbAN: Henrietta, drained--	80	Well suited		Well suited		Well suited	
HfbAU: Henrietta, undrained	75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75
HkkA: Hillsdale-----	80	Well suited		Well suited		Well suited	
HkkB: Hillsdale-----	80	Well suited		Well suited		Well suited	
HknC2: Hillsdale-----	55	Well suited		Moderately suited: Slope	0.50	Well suited	
Oshtemo-----	30	Well suited		Moderately suited: Slope	0.50	Well suited	
HknD2: Hillsdale-----	55	Well suited		Moderately suited: Slope	0.50	Well suited	
Oshtemo-----	30	Well suited		Moderately suited: Slope	0.50	Well suited	
HkpC2: Hillsdale-----	55	Well suited		Moderately suited: Slope	0.50	Well suited	
Tracy-----	30	Well suited		Moderately suited: Slope	0.50	Well suited	
HkpD2: Hillsdale-----	55	Well suited		Moderately suited: Slope	0.50	Well suited	
Tracy-----	30	Well suited		Moderately suited: Slope	0.50	Well suited	



Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HtbAN: Houghton, drained---	75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75
HtbAU: Houghton, undrained-	75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75
JaaAK: Jamestown-----	80	Well suited		Well suited		Moderately suited: Strength	0.50
MfaA: Martinsville-----	70	Well suited		Well suited		Moderately suited: Strength	0.50
MfaB2: Martinsville-----	70	Well suited		Well suited		Moderately suited: Strength	0.50
MfaC2: Martinsville-----	80	Well suited		Moderately suited: Slope	0.50	Moderately suited: Strength	0.50
MfrAN: Madaus, drained----	80	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness Strength	0.75 0.50
MfrAU: Madaus, undrained---	75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness Strength	1.00 0.50
MgcA: Maumee-----	80	Well suited		Well suited		Well suited	
MgdAN: Martisco, drained---	75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness Strength	1.00 0.50
MhaA: Maumee-----	80	Well suited		Well suited		Poorly suited: Wetness	1.00
MhbA: Maumee-----	90	Well suited		Well suited		Poorly suited: Wetness	1.00
MmbC2: Miami-----	80	Well suited		Moderately suited: Slope	0.50	Moderately suited: Strength	0.50
MmdC3: Miami-----	80	Well suited		Moderately suited: Slope	0.50	Moderately suited: Strength	0.50
MmdD3: Miami-----	80	Well suited		Moderately suited: Slope	0.50	Moderately suited: Strength	0.50

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MouA: Milford-----	85	Well suited		Well suited		Moderately suited: Strength	0.50
MsaA: Mishawaka-----	95	Well suited		Well suited		Well suited	
MtsB2: Morley-----	75	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
MtsC2: Morley-----	80	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness Slope	0.50 0.50	Moderately suited: Strength	0.50
MubD3: Morley-----	80	Moderately suited: Stickiness	0.50	Moderately suited: Slope Stickiness	0.50 0.50	Moderately suited: Strength	0.50
MvhAN: Moston, drained----	80	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Strength Wetness	1.00 1.00
MvhAU: Moston, undrained---	75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Strength Wetness	1.00 1.00
MvkA: Morocco-----	85	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50	Well suited	
MwzAN: Muskego, drained----	75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Strength Wetness	1.00 0.75
MwzAU: Muskego, undrained--	70	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Strength Wetness	1.00 0.75
OkrA: Oshtemo-----	80	Well suited		Well suited		Well suited	
OkrB: Oshtemo-----	80	Well suited		Well suited		Well suited	
OkrC2: Oshtemo-----	80	Well suited		Moderately suited: Slope	0.50	Well suited	
OkrD: Oshtemo-----	80	Well suited		Moderately suited: Slope	0.50	Well suited	
OlcA: Oshtemo-----	80	Well suited		Well suited		Well suited	

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OlcB: Oshtemo-----	80	Well suited		Well suited		Well suited	
OlcC2: Oshtemo-----	80	Well suited		Moderately suited: Slope	0.50	Well suited	
OlcD: Oshtemo-----	80	Well suited		Moderately suited: Slope	0.50	Well suited	
OmgA: Osolo-----	85	Well suited		Well suited		Well suited	
PaaAN: Palms, drained-----	80	Well suited		Well suited		Moderately suited: Strength	0.50
PaaAU: Palms, undrained----	75	Poorly suited: Wetness	0.75	Poorly suited: Wetness	0.75	Poorly suited: Wetness Strength	0.75 0.50
Pmg: Pits, gravel-----	100	Not rated		Not rated		Not rated	
Px1A: Psammaquents-----	85	Not rated		Not rated		Not rated	
Pxo: Psammments-----	85	Not rated		Not rated		Not rated	
QuiA: Quinn-----	80	Well suited		Well suited		Moderately suited: Strength	0.50
QuijA: Quinn-----	75	Well suited		Well suited		Well suited	
RenA: Rensselaer-----	85	Well suited		Well suited		Moderately suited: Strength	0.50
ReyA: Rensselaer-----	75	Well suited		Well suited		Moderately suited: Strength	0.50
RopA: Riddles-----	50	Well suited		Well suited		Well suited	
Oshtemo-----	35	Well suited		Well suited		Well suited	
RopB: Riddles-----	50	Well suited		Well suited		Well suited	
Oshtemo-----	35	Well suited		Well suited		Well suited	

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RopC2:							
Riddles-----	50	Well suited		Moderately suited: Slope	0.50	Well suited	
Oshtemo-----	35	Well suited		Moderately suited: Slope	0.50	Well suited	
RopD2:							
Riddles-----	50	Well suited		Moderately suited: Slope	0.50	Well suited	
Oshtemo-----	35	Well suited		Moderately suited: Slope	0.50	Well suited	
RoqB:							
Riddles-----	55	Well suited		Well suited		Well suited	
Metea-----	30	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50	Well suited	
RoqC2:							
Riddles-----	55	Well suited		Moderately suited: Slope	0.50	Well suited	
Metea-----	30	Moderately suited: Sandiness	0.50	Moderately suited: Slope Sandiness	0.50 0.50	Well suited	
RoqD2:							
Riddles-----	50	Well suited		Moderately suited: Slope	0.50	Well suited	
Metea-----	30	Moderately suited: Sandiness	0.50	Moderately suited: Slope Sandiness	0.50 0.50	Well suited	
SdzA:							
Selfridge-----	50	Well suited		Well suited		Well suited	
Crosier-----	35	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
SdzaB:							
Selfridge-----	50	Well suited		Well suited		Well suited	
Brems-----	35	Well suited		Well suited		Well suited	
SesA:							
Schoolcraft-----	80	Well suited		Well suited		Moderately suited: Strength	0.50
Sn1A:							
Southwest-----	75	Well suited		Well suited		Moderately suited: Strength	0.50
TmpA:							
Tracy-----	80	Well suited		Well suited		Well suited	
TmpB:							
Tracy-----	80	Well suited		Well suited		Well suited	

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TmpC2: Tracy-----	80	Well suited		Moderately suited: Slope	0.50	Well suited	
TmpD: Tracy-----	80	Well suited		Moderately suited: Slope	0.50	Well suited	
TnwA: Troxel-----	80	Well suited		Well suited		Moderately suited: Strength	0.50
TxuA: Tyner-----	85	Well suited		Well suited		Well suited	
TxuB: Tyner-----	85	Well suited		Well suited		Well suited	
TxuC: Tyner-----	85	Well suited		Moderately suited: Slope	0.50	Well suited	
TxuD: Tyner-----	85	Well suited		Moderately suited: Slope	0.50	Well suited	
TxuF: Tyner-----	80	Well suited		Unsuited: Slope	1.00	Moderately suited: Slope	0.50
Uam: Udorthents, loamy---	100	Not rated		Not rated		Not rated	
UdeA: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Well suited		Well suited		Well suited	
UdeB: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Well suited		Well suited		Well suited	
UdeC: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Well suited		Moderately suited: Slope	0.50	Well suited	
UdkA: Urban land-----	50	Not rated		Not rated		Not rated	
Brady-----	40	Well suited		Well suited		Well suited	

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UdzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Auten-----	40	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
UeaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Crosier-----	40	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
UeqA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Gilford-----	40	Well suited		Well suited		Well suited	
UewA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brems-----	25	Well suited		Well suited		Well suited	
Morocco-----	15	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50	Well suited	
UfbA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brookston-----	40	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
UfhA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50
UfhB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50
UfhC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Moderately suited: Sandiness	0.50	Moderately suited: Slope Sandiness	0.50 0.50	Moderately suited: Sandiness	0.50
UfmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coupee-----	40	Well suited		Well suited		Moderately suited: Strength	0.50
UfrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Del Rey-----	40	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50



Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UftA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Elston-----	40	Well suited		Well suited		Well suited	
UfzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Mishawaka-----	45	Well suited		Well suited		Well suited	
UgaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Morocco-----	40	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50	Well suited	
UglA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Osolo-----	40	Well suited		Well suited		Well suited	
UgrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Rensselaer-----	40	Well suited		Well suited		Moderately suited: Strength	0.50
UgsA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Well suited		Well suited		Well suited	
Oshtemo-----	15	Well suited		Well suited		Well suited	
UgsB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Well suited		Well suited		Well suited	
Oshtemo-----	15	Well suited		Well suited		Well suited	
UgvA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Well suited		Well suited		Well suited	
UgvB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Well suited		Well suited		Well suited	
UgvC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Well suited		Moderately suited: Slope	0.50	Well suited	

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UgvD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Well suited		Moderately suited: Slope	0.50	Well suited	
UhmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Well suited		Well suited		Well suited	
UhmB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Well suited		Well suited		Well suited	
UhoC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Well suited		Moderately suited: Slope	0.50	Well suited	
Oshtemo-----	15	Well suited		Moderately suited: Slope	0.50	Well suited	
UhoD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Well suited		Moderately suited: Slope	0.50	Well suited	
Oshtemo-----	15	Well suited		Moderately suited: Slope	0.50	Well suited	
UhpC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Well suited		Moderately suited: Slope	0.50	Well suited	
Tracy-----	15	Well suited		Moderately suited: Slope	0.50	Well suited	
UhpD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Well suited		Moderately suited: Slope	0.50	Well suited	
Tracy-----	15	Well suited		Moderately suited: Slope	0.50	Well suited	
UhwA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Well suited		Well suited		Moderately suited: Strength	0.50

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UhwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Well suited		Well suited		Moderately suited: Strength	0.50
UhwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Well suited		Moderately suited: Slope	0.50	Moderately suited: Strength	0.50
UkaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Maumee-----	40	Well suited		Well suited		Well suited	
UkeA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Milford-----	40	Well suited		Well suited		Moderately suited: Strength	0.50
UkxA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Well suited		Well suited		Well suited	
UkxB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Well suited		Well suited		Well suited	
UkxC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Well suited		Moderately suited: Slope	0.50	Well suited	
UmfB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Well suited		Well suited		Well suited	
Metea-----	15	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50	Well suited	
UmfC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Well suited		Moderately suited: Slope	0.50	Well suited	
Metea-----	15	Moderately suited: Sandiness	0.50	Moderately suited: Slope Sandiness	0.50 0.50	Well suited	

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UmfD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Well suited		Moderately suited: Slope	0.50	Well suited	
Metea-----	15	Moderately suited: Sandiness	0.50	Moderately suited: Slope Sandiness	0.50 0.50	Well suited	
UmpA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Schoolcraft-----	40	Well suited		Well suited		Moderately suited: Strength	0.50
UmuA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Southwest-----	40	Well suited		Well suited		Moderately suited: Strength	0.50
UmwA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Well suited		Well suited		Well suited	
UmwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Well suited		Well suited		Well suited	
UmwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Well suited		Moderately suited: Slope	0.50	Well suited	
UmwD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Well suited		Moderately suited: Slope	0.50	Well suited	
UmxA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Troxel-----	40	Well suited		Well suited		Moderately suited: Strength	0.50
UnoA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Whitaker-----	40	Well suited		Well suited		Moderately suited: Strength	0.50
UnqB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Williamstown-----	25	Well suited		Well suited		Moderately suited: Strength	0.50

Table 10c.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UnqB: Crosier-----	15	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
UntA: Urban land-----	50	Not rated		Not rated		Not rated	
Wunabuna, drained---	40	Well suited		Well suited		Moderately suited: Strength	0.50
Usl: Udorthents, rubbish-	100	Not rated		Not rated		Not rated	
W: Water-----	100	Not rated		Not rated		Not rated	
WcnAI: Waterford-----	80	Well suited		Well suited		Moderately suited: Strength	0.50
WoaA: Williamstown-----	85	Well suited		Well suited		Moderately suited: Strength	0.50
WoaB2: Williamstown-----	85	Well suited		Well suited		Moderately suited: Strength	0.50
WoaC2: Williamstown-----	80	Well suited		Moderately suited: Slope	0.50	Moderately suited: Strength	0.50
WobB: Williamstown-----	50	Well suited		Well suited		Moderately suited: Strength	0.50
Crosier-----	30	Moderately suited: Stickiness	0.50	Moderately suited: Stickiness	0.50	Moderately suited: Strength	0.50
WrxAN: Wunabuna, drained---	85	Well suited		Well suited		Moderately suited: Strength	0.50
WtbA: Whitaker-----	75	Well suited		Well suited		Moderately suited: Strength	0.50
WujB: Williamstown-----	45	Well suited		Well suited		Moderately suited: Strength	0.50
Moon-----	40	Moderately suited: Sandiness	0.50	Moderately suited: Sandiness	0.50	Well suited	

Table 10d.--Forestland Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
AahAK: Abscota-----	80	Low	
AatAN: Ackerman, drained---	85	High: Wetness Lime	1.00 0.50
AbhAN: Adrian, drained----	75	High: Wetness Soil reaction Lime	1.00 1.00 0.50
AbhAU: Adrian, undrained---	75	High: Wetness Soil reaction Lime	1.00 1.00 0.50
ApuAN: Antung, drained----	75	High: Wetness Soil reaction Lime	1.00 1.00 0.50
AxvA: Auten-----	82	High: Wetness	1.00
BaaA: Bainter-----	85	Low	
BaaB: Bainter-----	85	Low	
BaaC2: Bainter-----	85	Low	
BbmA: Baugo-----	85	Moderate: Wetness	0.50
BmgA: Blount-----	85	Moderate: Wetness	0.50
BshA: Brady-----	90	High: Wetness	1.00



Table 10d.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
BsxA:			
Brems-----	50	Low	
Morocco-----	40	High: Wetness	1.00
BteA:			
Brems-----	80	Low	
BuuA:			
Brookston-----	80	High: Wetness	1.00
CmbAI:			
Cohoctah-----	75	High: Wetness	1.00
CnbA:			
Coloma-----	85	Low	
CnbB:			
Coloma-----	85	Low	
CnbC:			
Coloma-----	85	Low	
CnbD:			
Coloma-----	85	Low	
CrrA:			
Coupee-----	85	Low	
CvdA:			
Crosier-----	85	Moderate: Wetness	0.50
CvdB:			
Crosier-----	80	Moderate: Wetness	0.50
CwkA:			
Crumstown-----	80	Low	
CwkB:			
Crumstown-----	80	Low	
DcrA:			
Del Rey-----	85	Moderate: Wetness	0.50
EchAN:			
Edwards, drained----	80	High: Wetness	1.00
		Lime	1.00
		Soil reaction	0.50

Table 10d.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
EchAU:			
Edwards, undrained--	75	High:	
		Wetness	1.00
		Lime	1.00
		Soil reaction	0.50
EcrAN:			
Edselton, drained---	70	High:	
		Wetness	1.00
		Lime	1.00
		Soil reaction	0.50
EcrAU:			
Edselton, undrained-	70	High:	
		Wetness	1.00
		Lime	1.00
		Soil reaction	0.50
EmeA:			
Elston-----	85	Low	
GczA:			
Gilford-----	75	High:	
		Wetness	1.00
GdnA:			
Gilford-----	75	High:	
		Wetness	1.00
HfbAN:			
Henrietta, drained--	80	High:	
		Wetness	1.00
HfbAU:			
Henrietta, undrained	75	High:	
		Wetness	1.00
HkkA:			
Hillsdale-----	80	Low	
HkkB:			
Hillsdale-----	80	Low	
HknC2:			
Hillsdale-----	55	Low	
Oshtemo-----	30	Low	
HknD2:			
Hillsdale-----	55	Low	
Oshtemo-----	30	Low	
HkpC2:			
Hillsdale-----	55	Low	
Tracy-----	30	Low	

Table 10d.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
HkpD2:			
Hillsdale-----	55	Low	
Tracy-----	30	Low	
HtbAN:			
Houghton, drained---	75	High:	
		Wetness	1.00
		Soil reaction	1.00
HtbAU:			
Houghton, undrained-	75	High:	
		Wetness	1.00
		Soil reaction	1.00
JaaAK:			
Jamestown-----	80	High:	
		Wetness	1.00
MfaA:			
Martinsville-----	70	Low:	
MfaB2:			
Martinsville-----	70	Low	
MfaC2:			
Martinsville-----	80	Low	
MfrAN:			
Madaus, drained----	80	High:	
		Wetness	1.00
		Lime	1.00
		Soil reaction	0.50
MfrAU:			
Madaus, undrained---	75	High:	
		Wetness	1.00
		Lime	1.00
		Soil reaction	0.50
MgcA:			
Maumee-----	80	High:	
		Wetness	1.00
MgdAN:			
Martisco, drained---	75	High:	
		Wetness	1.00
		Lime	1.00
		Soil reaction	0.50
MhaA:			
Maumee-----	80	High:	
		Wetness	1.00
MhbA:			
Maumee-----	90	High:	
		Wetness	1.00
MmbC2:			
Miami-----	80	Low	

Table 10d.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
MmdC3:			
Miami-----	80	Low	
MmdD3:			
Miami-----	80	Low	
MouA:			
Milford-----	85	High: Wetness	1.00
MsaA:			
Mishawaka-----	95	Low	
MtsB2:			
Morley-----	75	Low	
MtsC2:			
Morley-----	80	Low	
MubD3:			
Morley-----	80	Low	
MvhAN:			
Moston, drained----	80	High: Wetness	1.00
MvhAU:			
Moston, undrained---	75	High: Wetness	1.00
MvkA:			
Morocco-----	85	High: Wetness	1.00
MwzAN:			
Muskego, drained----	75	High: Wetness	1.00
MwzAU:			
Muskego, undrained--	70	High: Wetness	1.00
OkrA:			
Oshtemo-----	80	Low	
OkrB:			
Oshtemo-----	80	Low	
OkrC2:			
Oshtemo-----	80	Low	
OkrD:			
Oshtemo-----	80	Low	
OlcA:			
Oshtemo-----	80	Low	
OlcB:			
Oshtemo-----	80	Low	

Table 10d.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
OlcC2:			
Oshtemo-----	80	Low	
OlcD:			
Oshtemo-----	80	Low	
OmgA:			
Osolo-----	85	Low	
PaaAN:			
Palms, drained-----	80	High:	
		Wetness	1.00
		Soil reaction	1.00
PaaAU:			
Palms, undrained----	75	High:	
		Wetness	1.00
		Soil reaction	1.00
Pmg:			
Pits, gravel-----	100	Not rated	
Px1A:			
Psammaquents-----	85	Not rated	
Pxo:			
Psammments-----	85	Not rated	
QuiA:			
Quinn-----	80	High:	
		Wetness	1.00
QuijA:			
Quinn-----	75	High:	
		Wetness	1.00
RenA:			
Rensselaer-----	85	High:	
		Wetness	1.00
ReyA:			
Rensselaer-----	75	High:	
		Wetness	1.00
RopA:			
Riddles-----	50	Low	
Oshtemo-----	35	Low	
RopB:			
Riddles-----	50	Low	
Oshtemo-----	35	Low	
RopC2:			
Riddles-----	50	Low	
Oshtemo-----	35	Low	

Table 10d.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
RopD2:			
Riddles-----	50	Low	
Oshtemo-----	35	Low	
RogB:			
Riddles-----	55	Low	
Metea-----	30	Low	
RogC2:			
Riddles-----	55	Low	
Metea-----	30	Low	
RogD2:			
Riddles-----	50	Low	
Metea-----	30	Low	
SdzA:			
Selfridge-----	50	Low	
Crosier-----	35	Moderate: Wetness	0.50
SdzaB:			
Selfridge-----	50	Low	
Brems-----	35	Low	
SesA:			
Schoolcraft-----	80	Low	
Sn1A:			
Southwest-----	75	High: Wetness	1.00
TmpA:			
Tracy-----	80	Low	
TmpB:			
Tracy-----	80	Low	
TmpC2:			
Tracy-----	80	Low	
TmpD:			
Tracy-----	80	Low	
TnWA:			
Troxel-----	80	Low	
TxuA:			
Tyner-----	85	Low	
TxuB:			
Tyner-----	85	Low	



Table 10d.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
TxuC:			
Tyner-----	85	Low	
TxuD:			
Tyner-----	85	Low	
TxuF:			
Tyner-----	80	Low	
Uam:			
Udorthents, loamy---	100	Not rated	
UdeA:			
Urban land-----	50	Not rated	
Bainter-----	40	Low	
UdeB:			
Urban land-----	50	Not rated	
Bainter-----	40	Low	
UdeC:			
Urban land-----	50	Not rated	
Bainter-----	40	Low	
UdkA:			
Urban land-----	50	Not rated	
Brady-----	40	High: Wetness	1.00
UdzA:			
Urban land-----	50	Not rated	
Auten-----	40	High: Wetness	1.00
UeaA:			
Urban land-----	50	Not rated	
Crosier-----	40	Moderate: Wetness	0.50
UeqA:			
Urban land-----	50	Not rated	
Gilford-----	40	High: Wetness	1.00
UewA:			
Urban land-----	50	Not rated	
Brems-----	25	Low	
Morocco-----	15	High: Wetness	1.00

Table 10d.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
UfbA:			
Urban land-----	50	Not rated	
Brookston-----	40	High: Wetness	1.00
UfhA:			
Urban land-----	50	Not rated	
Coloma-----	40	Low	
UfhB:			
Urban land-----	50	Not rated	
Coloma-----	40	Low	
UfhC:			
Urban land-----	50	Not rated	
Coloma-----	40	Low	
UfmA:			
Urban land-----	50	Not rated	
Coupee-----	40	Low	
UfrA:			
Urban land-----	50	Not rated	
Del Rey-----	40	Moderate: Wetness	0.50
UftA:			
Urban land-----	50	Not rated	
Elston-----	40	Low	
UfzA:			
Urban land-----	50	Not rated	
Mishawaka-----	45	Low	
UgaA:			
Urban land-----	50	Not rated	
Morocco-----	40	High: Wetness	1.00
UglA:			
Urban land-----	50	Not rated	
Osolo-----	40	Low	
UgrA:			
Urban land-----	50	Not rated	
Rensselaer-----	40	High: Wetness	1.00

Table 10d.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
UgsA:			
Urban land-----	50	Not rated	
Riddles-----	25	Low	
Oshtemo-----	15	Low	
UgsB:			
Urban land-----	50	Not rated	
Riddles-----	25	Low	
Oshtemo-----	15	Low	
UgvA:			
Urban land-----	50	Not rated	
Tyner-----	40	Low	
UgvB:			
Urban land-----	50	Not rated	
Tyner-----	40	Low	
UgvC:			
Urban land-----	50	Not rated	
Tyner-----	40	Low	
UgvD:			
Urban land-----	50	Not rated	
Tyner-----	40	Low	
UhmA:			
Urban land-----	50	Not rated	
Hillsdale-----	40	Low	
UhmB:			
Urban land-----	50	Not rated	
Hillsdale-----	40	Low	
UhoC:			
Urban land-----	50	Not rated	
Hillsdale-----	30	Low	
Oshtemo-----	15	Low	
UhoD:			
Urban land-----	50	Not rated	
Hillsdale-----	30	Low	
Oshtemo-----	15	Low	

Table 10d.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
UhpC:			
Urban land-----	50	Not rated	
Hillsdale-----	30	Low	
Tracy-----	15	Low	
UhpD:			
Urban land-----	50	Not rated	
Hillsdale-----	30	Low	
Tracy-----	15	Low	
UhwA:			
Urban land-----	50	Not rated	
Martinsville-----	40	Low	
UhwB:			
Urban land-----	50	Not rated	
Martinsville-----	40	Low	
UhwC:			
Urban land-----	50	Not rated	
Martinsville-----	40	Low	
UkaA:			
Urban land-----	50	Not rated	
Maumee-----	40	High: Wetness	1.00
UkeA:			
Urban land-----	50	Not rated	
Milford-----	40	High: Wetness	1.00
UkxA:			
Urban land-----	50	Not rated	
Oshtemo-----	40	Low	
UkxB:			
Urban land-----	50	Not rated	
Oshtemo-----	40	Low	
UkxC:			
Urban land-----	50	Not rated	
Oshtemo-----	40	Low	

Table 10d.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
UmFB:			
Urban land-----	50	Not rated	
Riddles-----	25	Low	
Metea-----	15	Low	
UmFC:			
Urban land-----	50	Not rated	
Riddles-----	25	Low	
Metea-----	15	Low	
UmFD:			
Urban land-----	50	Not rated	
Riddles-----	25	Low	
Metea-----	15	Low	
UmpA:			
Urban land-----	50	Not rated	
Schoolcraft-----	40	Low	
UmuA:			
Urban land-----	50	Not rated	
Southwest-----	40	High: Wetness	1.00
UmwA:			
Urban land-----	50	Not rated	
Tracy-----	40	Low	
UmwB:			
Urban land-----	50	Not rated	
Tracy-----	40	Low	
UmwC:			
Urban land-----	50	Not rated	
Tracy-----	40	Low	
UmwD:			
Urban land-----	50	Not rated	
Tracy-----	40	Low	
UmxA:			
Urban land-----	50	Not rated	
Troxel-----	40	Low	

Table 10d.--Forestland Management--Continued

Map symbol and soil name	Pct. of map unit	Potential for seedling mortality	
		Rating class and limiting features	Value
UnoA:			
Urban land-----	50	Not rated	
Whitaker-----	40	High: Wetness	1.00
UnqB:			
Urban land-----	50	Not rated	
Williamstown-----	25	Low	
Crosier-----	15	Moderate: Wetness	0.50
UntA:			
Urban land-----	50	Not rated	
Wunabuna, drained---	40	High: Wetness	1.00
Usl:			
Udorthents, rubbish-	100	Not rated	
W:			
Water-----	100	Not rated	
WcnAI:			
Waterford-----	80	High: Wetness	1.00
WoaA:			
Williamstown-----	85	Low	
WoaB2:			
Williamstown-----	85	Low	
WoaC2:			
Williamstown-----	80	Low	
WobB:			
Williamstown-----	50	Low	
Crosier-----	30	Moderate: Wetness	0.50
WrxAN:			
Wunabuna, drained---	85	High: Wetness	1.00
WtbA:			
Whitaker-----	75	High: Wetness	1.00
WujB:			
Williamstown-----	45	Low	
Moon-----	40	Low	



Table 11a.--Recreation

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
<b>AahAK:</b>							
Aboscota-----	80	Very limited: Flooding Too sandy	1.00 0.50	Somewhat limited: Too sandy	0.50	Somewhat limited: Flooding Too sandy	0.60 0.50
<b>AatAN:</b>							
Ackerman, drained---	85	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.96	Very limited: Ponding Depth to saturated zone Restricted permeability	1.00 1.00 0.96	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.96
<b>AbhAN:</b>							
Adrian, drained----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
<b>AbhAU:</b>							
Adrian, undrained---	75	Very limited: Depth to saturated zone Ponding Content of organic matter	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00
<b>ApuAN:</b>							
Antung, drained----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
<b>AxvA:</b>							
Auten-----	82	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
<b>BaaA:</b>							
Bainter-----	85	Not limited		Not limited		Not limited	
<b>BaaB:</b>							
Bainter-----	85	Not limited		Not limited		Somewhat limited: Slope	0.12
<b>BaaC2:</b>							
Bainter-----	85	Not limited		Not limited		Very limited: Slope	1.00
<b>BbmA:</b>							
Baugo-----	85	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BmgA: Blount-----	85	Very limited: Depth to saturated zone Restricted permeability	1.00  0.96	Very limited: Depth to saturated zone Restricted permeability	1.00  0.96	Very limited: Depth to saturated zone Restricted permeability	1.00  0.96
BshA: Brady-----	90	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Gravel content	1.00  0.04
BsxA: Brems-----	50	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy	0.59
Morocco-----	40	Very limited: Depth to saturated zone Too sandy	1.00  0.88	Very limited: Depth to saturated zone Too sandy	1.00  0.88	Very limited: Depth to saturated zone Too sandy	1.00  0.88
BteA: Brems-----	80	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy	0.59
BuuA: Brookston-----	80	Very limited: Depth to saturated zone Ponding	1.00  1.00	Very limited: Ponding Depth to saturated zone	1.00  1.00	Very limited: Depth to saturated zone Ponding	1.00  1.00
CmbAI: Cohoctah-----	75	Very limited: Depth to saturated zone Flooding	1.00  1.00	Very limited: Depth to saturated zone Flooding	1.00  0.40	Very limited: Depth to saturated zone Flooding	1.00  1.00
CnbA: Coloma-----	85	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00
CnbB: Coloma-----	85	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Very limited: Too sandy Slope	1.00  0.50
CnbC: Coloma-----	85	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Very limited: Too sandy Slope	1.00  1.00
CnbD: Coloma-----	85	Very limited: Too sandy Slope	1.00  0.96	Very limited: Too sandy Slope	1.00  0.96	Very limited: Slope Too sandy	1.00  1.00
CrrA: Coupee-----	85	Not limited		Not limited		Not limited	

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CvdA: Crosier-----	85	Very limited: Depth to saturated zone Restricted permeability	1.00  0.21	Very limited: Depth to saturated zone Restricted permeability	1.00  0.21	Very limited: Depth to saturated zone Restricted permeability	1.00  0.21
CvdB: Crosier-----	80	Very limited: Depth to saturated zone Restricted permeability	1.00  0.21	Very limited: Depth to saturated zone Restricted permeability	1.00  0.21	Very limited: Depth to saturated zone Restricted permeability Slope	1.00  0.21  0.12
CwkA: Crumstown-----	80	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02
CwkB: Crumstown-----	80	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Somewhat limited: Slope Too sandy	0.12  0.02
DcrA: Del Rey-----	85	Very limited: Depth to saturated zone Restricted permeability	1.00  0.96	Very limited: Depth to saturated zone Restricted permeability	1.00  0.96	Very limited: Depth to saturated zone Restricted permeability	1.00  0.96
EchAN: Edwards, drained---	80	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00  1.00 0.96	Very limited: Ponding Depth to saturated zone Restricted permeability	1.00  1.00 0.96	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00  1.00 0.96
EchAU: Edwards, undrained--	75	Very limited: Depth to saturated zone Ponding Content of organic matter Restricted permeability	1.00  1.00 1.00 0.96	Very limited: Ponding Depth to saturated zone Content of organic matter Restricted permeability	1.00  1.00 1.00 0.96	Very limited: Depth to saturated zone Content of organic matter Ponding Restricted permeability	1.00  1.00 1.00 0.96
EcrAN: Edselton, drained---	70	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00  1.00 0.96	Very limited: Ponding Depth to saturated zone Restricted permeability	1.00  1.00 0.96	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00  1.00 0.96

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EcrAU: Edselton, undrained-	70	Very limited: Depth to saturated zone Ponding Content of organic matter Restricted permeability	1.00 1.00 1.00 0.96	Very limited: Ponding Depth to saturated zone Content of organic matter Restricted permeability	1.00 1.00 1.00 0.96	Very limited: Depth to saturated zone Content of organic matter Ponding Restricted permeability	1.00 1.00 1.00 0.96
EmeA: Elston-----	85	Not limited		Not limited		Not limited	
GczA: Gilford-----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
GdnA: Gilford-----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
HfbAN: Henrietta, drained--	80	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00
HfbAU: Henrietta, undrained	75	Very limited: Depth to saturated zone Ponding Content of organic matter	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00
HkkA: Hillsdale-----	80	Not limited		Not limited		Not limited	
HkkB: Hillsdale-----	80	Not limited		Not limited		Somewhat limited: Slope	0.12
HknC2: Hillsdale-----	55	Not limited		Not limited		Very limited: Slope	1.00
Oshtemo-----	30	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Very limited: Slope Too sandy	1.00 0.01
HknD2: Hillsdale-----	55	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HknD2: Oshtemo-----	30	Somewhat limited: Slope Too sandy	0.96 0.01	Somewhat limited: Slope Too sandy	0.96 0.01	Very limited: Slope Too sandy	1.00 0.01
HkpC2: Hillsdale-----	55	Not limited		Not limited		Very limited: Slope	1.00
Tracy-----	30	Not limited		Not limited		Very limited: Slope Gravel content	1.00 0.11
HkpD2: Hillsdale-----	55	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Tracy-----	30	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope Gravel content	1.00 0.11
HtbAN: Houghton, drained---	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
HtbAU: Houghton, undrained-	75	Very limited: Depth to saturated zone Ponding Content of organic matter	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00 1.00
JaaAK: Jamestown-----	80	Very limited: Depth to saturated zone Flooding	1.00 1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Flooding	1.00 0.60
MfaA: Martinsville-----	70	Not limited		Not limited		Not limited	
MfaB2: Martinsville-----	70	Not limited		Not limited		Somewhat limited: Slope	0.12
MfaC2: Martinsville-----	80	Not limited		Not limited		Very limited: Slope	1.00
MfrAN: Madaus, drained----	80	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.96	Very limited: Ponding Depth to saturated zone Restricted permeability	1.00 1.00 0.96	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.96

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MfrAU: Madaus, undrained---	75	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.96	Very limited: Ponding Depth to saturated zone Restricted permeability	1.00 1.00 0.96	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.96
MgcA: Maumee-----	80	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50
MgdAN: Martisco, drained---	75	Very limited: Depth to saturated zone Ponding Content of organic matter Restricted permeability	1.00 1.00 1.00 1.00 0.96	Very limited: Ponding Depth to saturated zone Content of organic matter Restricted permeability	1.00 1.00 1.00 1.00 0.96	Very limited: Depth to saturated zone Content of organic matter Ponding Restricted permeability	1.00 1.00 1.00 1.00 0.96
MhaA: Maumee-----	80	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50
MhbA: Maumee-----	90	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone Too sandy	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50
MmbC2: Miami-----	80	Somewhat limited: Restricted permeability	0.21	Somewhat limited: Restricted permeability	0.21	Very limited: Slope Restricted permeability	1.00 0.21
MmdC3: Miami-----	80	Somewhat limited: Restricted permeability	0.21	Somewhat limited: Restricted permeability	0.21	Very limited: Slope Restricted permeability	1.00 0.21
MmdD3: Miami-----	80	Somewhat limited: Slope Restricted permeability	0.96 0.21	Somewhat limited: Slope Restricted permeability	0.96 0.21	Very limited: Slope Restricted permeability	1.00 0.21



Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MouA: Milford-----	85	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.21	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.21	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.21
MsaA: Mishawaka-----	95	Somewhat limited: Too sandy	0.04	Somewhat limited: Too sandy	0.04	Somewhat limited: Gravel content Too sandy	0.06 0.04
MtsB2: Morley-----	75	Somewhat limited: Restricted permeability Depth to saturated zone	0.43 0.39	Somewhat limited: Restricted permeability Depth to saturated zone	0.43 0.19	Somewhat limited: Slope Restricted permeability Depth to saturated zone	0.50 0.43 0.39
MtsC2: Morley-----	80	Somewhat limited: Restricted permeability Depth to saturated zone Slope	0.43 0.39 0.04	Somewhat limited: Restricted permeability Depth to saturated zone Slope	0.43 0.19 0.04	Very limited: Slope Restricted permeability Depth to saturated zone	1.00 0.43 0.39
MubD3: Morley-----	80	Very limited: Slope Restricted permeability Depth to saturated zone	1.00 0.43 0.39	Very limited: Slope Restricted permeability Depth to saturated zone	1.00 0.43 0.19	Very limited: Slope Restricted permeability Depth to saturated zone	1.00 0.43 0.39
MvhAN: Moston, drained----	80	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.96	Very limited: Ponding Depth to saturated zone Restricted permeability	1.00 1.00 0.96	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.96
MvhAU: Moston, undrained---	75	Very limited: Depth to saturated zone Ponding Content of organic matter Restricted permeability	1.00 1.00 1.00 0.96	Very limited: Ponding Depth to saturated zone Content of organic matter Restricted permeability	1.00 1.00 1.00 0.96	Very limited: Depth to saturated zone Content of organic matter Ponding Restricted permeability	1.00 1.00 1.00 0.96
MvkA: Morocco-----	85	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Too sandy	1.00 0.88

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MwzAN: Muskego, drained----	75	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.96	Very limited: Ponding Depth to saturated zone Restricted permeability	1.00 1.00 0.96	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.96
MwzAU: Muskego, undrained--	70	Very limited: Depth to saturated zone Ponding Content of organic matter Restricted permeability	1.00 1.00 1.00 0.96	Very limited: Ponding Depth to saturated zone Content of organic matter Restricted permeability	1.00 1.00 1.00 0.96	Very limited: Depth to saturated zone Content of organic matter Ponding Restricted permeability	1.00 1.00 1.00 0.96
OkrA: Oshtemo-----	80	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02
OkrB: Oshtemo-----	80	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Somewhat limited: Slope Too sandy	0.12 0.02
OkrC2: Oshtemo-----	80	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Very limited: Slope Too sandy	1.00 0.02
OkrD: Oshtemo-----	80	Somewhat limited: Slope Too sandy	0.96 0.02	Somewhat limited: Slope Too sandy	0.96 0.02	Very limited: Slope Too sandy	1.00 0.02
OlcA: Oshtemo-----	80	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01
OlcB: Oshtemo-----	80	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Somewhat limited: Slope Too sandy	0.12 0.01
OlcC2: Oshtemo-----	80	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Very limited: Slope Too sandy	1.00 0.01
OlcD: Oshtemo-----	80	Somewhat limited: Slope Too sandy	0.96 0.01	Somewhat limited: Slope Too sandy	0.96 0.01	Very limited: Slope Too sandy	1.00 0.01
OmgA: Osolo-----	85	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
PaaAN: Palms, drained-----	80	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00
PaaAU: Palms, undrained----	75	Very limited: Depth to saturated zone Ponding Content of organic matter	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00
Pmg: Pits, gravel-----	100	Not rated		Not rated		Not rated	
PxlA: Psammaquents-----	85	Not rated		Not rated		Not rated	
Pxo: Psammments-----	85	Not rated		Not rated		Not rated	
QuiA: Quinn-----	80	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
QujA: Quinn-----	75	Very limited: Depth to saturated zone Too sandy	1.00 0.04	Very limited: Depth to saturated zone Too sandy	1.00 0.04	Very limited: Depth to saturated zone Gravel content Too sandy	1.00 0.06 0.04
RenA: Rensselaer-----	85	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
ReyA: Rensselaer-----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
RopA: Riddles-----	50	Not limited		Not limited		Not limited	
Oshtemo-----	35	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RopB:							
Riddles-----	50	Not limited		Not limited		Somewhat limited: Slope	0.12
Oshtemo-----	35	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Somewhat limited: Slope Too sandy	0.12 0.02
RopC2:							
Riddles-----	50	Not limited		Not limited		Very limited: Slope	1.00
Oshtemo-----	35	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Very limited: Slope Too sandy	1.00 0.02
RopD2:							
Riddles-----	50	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Oshtemo-----	35	Somewhat limited: Slope Too sandy	0.96 0.02	Somewhat limited: Slope Too sandy	0.96 0.02	Very limited: Slope Too sandy	1.00 0.02
RoqB:							
Riddles-----	55	Not limited		Not limited		Somewhat limited: Slope	0.12
Metea-----	30	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy Slope	0.50 0.12
RoqC2:							
Riddles-----	55	Not limited		Not limited		Very limited: Slope	1.00
Metea-----	30	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Very limited: Slope Too sandy	1.00 0.50
RoqD2:							
Riddles-----	50	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Metea-----	30	Somewhat limited: Slope Too sandy	0.96 0.50	Somewhat limited: Slope Too sandy	0.96 0.50	Very limited: Slope Too sandy	1.00 0.50
SdzA:							
Selfridge-----	50	Somewhat limited: Depth to saturated zone Too sandy Restricted permeability	0.98 0.50 0.21	Somewhat limited: Depth to saturated zone Too sandy Restricted permeability	0.75 0.50 0.21	Somewhat limited: Depth to saturated zone Too sandy Restricted permeability	0.98 0.50 0.21
Crosier-----	35	Very limited: Depth to saturated zone Restricted permeability	1.00 0.21	Very limited: Depth to saturated zone Restricted permeability	1.00 0.21	Very limited: Depth to saturated zone Restricted permeability	1.00 0.21

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SdzaB: Selfridge-----	50	Somewhat limited: Depth to saturated zone Too sandy Restricted permeability	0.98  0.50 0.21	Somewhat limited: Depth to saturated zone Too sandy Restricted permeability	0.75  0.50 0.21	Somewhat limited: Depth to saturated zone Too sandy Restricted permeability Slope	0.98  0.50 0.21  0.12
Brems-----	35	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy Slope	0.59 0.12
SesA: Schoolcraft-----	80	Not limited		Not limited		Not limited	
Sn1A: Southwest-----	75	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00  1.00 0.21	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00  1.00 0.21	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00  1.00 0.21
TmpA: Tracy-----	80	Not limited		Not limited		Somewhat limited: Gravel content	0.11
TmpB: Tracy-----	80	Not limited		Not limited		Somewhat limited: Slope Gravel content	0.12 0.11
TmpC2: Tracy-----	80	Not limited		Not limited		Very limited: Slope Gravel content	1.00 0.11
TmpD: Tracy-----	80	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope Gravel content	1.00 0.11
TnwA: Troxel-----	80	Not limited		Not limited		Not limited	
TxuA: Tyner-----	85	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92
TxuB: Tyner-----	85	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy Slope	0.92 0.12
TxuC: Tyner-----	85	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Very limited: Slope Too sandy	1.00 0.92

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TxuD:							
Tyner-----	85	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.96	Slope	0.96	Slope	1.00
		Too sandy	0.92	Too sandy	0.92	Too sandy	0.92
TxuF:							
Tyner-----	80	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too sandy	0.92	Too sandy	0.92	Too sandy	0.92
Uam:							
Udorthents, loamy---	100	Not rated		Not rated		Not rated	
UdeA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Not limited		Not limited		Not limited	
UdeB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Not limited		Not limited		Somewhat limited: Slope	0.12
UdeC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Not limited		Not limited		Very limited: Slope	1.00
UdkA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brady-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Gravel content	1.00 0.04
UdzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Auten-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
UeaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Crosier-----	40	Very limited: Depth to saturated zone Restricted permeability	1.00 0.21	Very limited: Depth to saturated zone Restricted permeability	1.00 0.21	Very limited: Depth to saturated zone Restricted permeability	1.00 0.21
UeqA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Gilford-----	40	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00



Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UewA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brems-----	25	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy	0.59
Morocco-----	15	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Too sandy	1.00 0.88
UfbA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brookston-----	40	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
UfhA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00
UfhB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Very limited: Too sandy Slope	1.00 0.50
UfhC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Very limited: Too sandy Slope	1.00 1.00
UfmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coupee-----	40	Not limited		Not limited		Not limited	
UfrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Del Rey-----	40	Very limited: Depth to saturated zone Restricted permeability	1.00 0.96	Very limited: Depth to saturated zone Restricted permeability	1.00 0.96	Very limited: Depth to saturated zone Restricted permeability	1.00 0.96
UftA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Elston-----	40	Not limited		Not limited		Not limited	

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UfzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Mishawaka-----	45	Somewhat limited: Too sandy	0.04	Somewhat limited: Too sandy	0.04	Somewhat limited: Gravel content Too sandy	0.06 0.04
UgaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Morocco-----	40	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Too sandy	1.00 0.88
UglA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Osolo-----	40	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50
UgrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Rensselaer-----	40	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
UgsA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Not limited	
Oshtemo-----	15	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02
UgsB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Somewhat limited: Slope	0.12
Oshtemo-----	15	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Somewhat limited: Slope Too sandy	0.12 0.02
UgvA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92
UgvB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy Slope	0.92 0.12

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UgvC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Very limited: Slope Too sandy	1.00 0.92
UgvD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Somewhat limited: Slope Too sandy	0.96 0.92	Somewhat limited: Slope Too sandy	0.96 0.92	Very limited: Slope Too sandy	1.00 0.92
UhmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Not limited		Not limited		Not limited	
UhmB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Not limited		Not limited		Somewhat limited: Slope	0.12
UhoC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Not limited		Not limited		Very limited: Slope	1.00
Oshtemo-----	15	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Very limited: Slope Too sandy	1.00 0.01
UhoD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Oshtemo-----	15	Somewhat limited: Slope Too sandy	0.96 0.01	Somewhat limited: Slope Too sandy	0.96 0.01	Very limited: Slope Too sandy	1.00 0.01
UhpC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Not limited		Not limited		Very limited: Slope	1.00
Tracy-----	15	Not limited		Not limited		Very limited: Slope Gravel content	1.00 0.11

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UhpD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Tracy-----	15	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope Gravel content	1.00 0.11
UhwA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Not limited		Not limited		Not limited	
UhwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Not limited		Not limited		Somewhat limited: Slope	0.12
UhwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Not limited		Not limited		Very limited: Slope	1.00
UkaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Maumee-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Too sandy	0.50	Too sandy	0.50	Too sandy	0.50
UkeA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Milford-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability	0.21
Ukx A:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01
Ukx B:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Somewhat limited: Slope Too sandy	0.12 0.01

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UkxC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Very limited: Slope Too sandy	1.00 0.01
UmfB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Somewhat limited: Slope	0.12
Metea-----	15	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy Slope	0.50 0.12
UmfC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Very limited: Slope	1.00
Metea-----	15	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Very limited: Slope Too sandy	1.00 0.50
UmfD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Metea-----	15	Somewhat limited: Slope Too sandy	0.96 0.50	Somewhat limited: Slope Too sandy	0.96 0.50	Very limited: Slope Too sandy	1.00 0.50
UmpA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Schoolcraft-----	40	Not limited		Not limited		Not limited	
UmuA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Southwest-----	40	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.21	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.21	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.21
UmwA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Not limited		Not limited		Somewhat limited: Gravel content	0.11

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UmwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Not limited		Not limited		Somewhat limited: Slope	0.12
						Gravel content	0.11
UmwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Not limited		Not limited		Very limited: Slope	1.00
						Gravel content	0.11
UmwD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
						Gravel content	0.11
UmxA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Troxel-----	40	Not limited		Not limited		Not limited	
UnoA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Whitaker-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
UnqB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Williamstown-----	25	Somewhat limited: Depth to saturated zone	0.39	Somewhat limited: Restricted permeability	0.21	Somewhat limited: Depth to saturated zone	0.39
		Restricted permeability	0.21	Depth to saturated zone	0.19	Restricted permeability Slope	0.21
							0.12
Crosier-----	15	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Restricted permeability	0.21	Restricted permeability	0.21	Restricted permeability Slope	0.21
							0.12
UntA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Wunabuna, drained---	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
Usl:							
Udorthents, rubbish-	100	Not rated		Not rated		Not rated	



Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
W:							
Water-----	100	Not rated		Not rated		Not rated	
WcnAI:							
Waterford-----	80	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
WoaA:							
Williamstown-----	85	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Depth to	0.39	Restricted	0.21	Depth to	0.39
		saturated zone		permeability		saturated zone	
		Restricted	0.21	Depth to	0.19	Restricted	0.21
		permeability		saturated zone		permeability	
WoaB2:							
Williamstown-----	85	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Depth to	0.39	Restricted	0.21	Depth to	0.39
		saturated zone		permeability		saturated zone	
		Restricted	0.21	Depth to	0.19	Restricted	0.21
		permeability		saturated zone		permeability	
						Slope	0.12
WoaC2:							
Williamstown-----	80	Somewhat limited:		Somewhat limited:		Very limited:	
		Depth to	0.39	Restricted	0.21	Slope	1.00
		saturated zone		permeability		Depth to	0.39
		Restricted	0.21	Depth to	0.19	saturated zone	
		permeability		saturated zone		Restricted	0.21
						permeability	
WobB:							
Williamstown-----	50	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Depth to	0.39	Restricted	0.21	Depth to	0.39
		saturated zone		permeability		saturated zone	
		Restricted	0.21	Depth to	0.19	Restricted	0.21
		permeability		saturated zone		permeability	
						Slope	0.12
Crosier-----	30	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Restricted	0.21	Restricted	0.21	Restricted	0.21
		permeability		permeability		permeability	
						Slope	0.12
WrxAN:							
Wunabuna, drained---	85	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
WtbA:							
Whitaker-----	75	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	

Table 11a.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WujB:							
Williamstown-----	45	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Depth to	0.39	Restricted	0.21	Depth to	0.39
		saturated zone		permeability		saturated zone	
		Restricted	0.21	Depth to	0.19	Restricted	0.21
		permeability		saturated zone		permeability	
						Slope	0.12
Moon-----	40	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Too sandy	0.59	Too sandy	0.59	Too sandy	0.59
		Depth to	0.07	Depth to	0.03	Slope	0.12
		saturated zone		saturated zone		Depth to	0.07
						saturated zone	
						Gravel content	0.06

Table 11b.--Recreation

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
<b>AahAK:</b> Abscota-----	80	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Somewhat limited: Droughty Flooding	0.66 0.60
<b>AatAN:</b> Ackerman, drained---	85	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
<b>AbhAN:</b> Adrian, drained----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
<b>AbhAU:</b> Adrian, undrained---	75	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Ponding Content of organic matter Depth to saturated zone	1.00 1.00 1.00
<b>ApuAN:</b> Antung, drained----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
<b>AxvA:</b> Auten-----	82	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
<b>BaaA:</b> Bainter-----	85	Not limited		Not limited		Not limited	
<b>BaaB:</b> Bainter-----	85	Not limited		Not limited		Not limited	
<b>BaaC2:</b> Bainter-----	85	Not limited		Not limited		Not limited	
<b>BbmA:</b> Baugo-----	85	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
<b>BmgA:</b> Blount-----	85	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BshA: Brady-----	90	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
BsxA: Brems-----	50	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy	0.59	Somewhat limited: Droughty	0.01
Morocco-----	40	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Droughty	1.00 0.15
BteA: Brems-----	80	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy	0.59	Somewhat limited: Droughty	0.01
BuuA: Brookston-----	80	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
CmbAI: Cohoctah-----	75	Very limited: Depth to saturated zone Flooding	1.00 0.40	Very limited: Depth to saturated zone Flooding	1.00 0.40	Very limited: Flooding Depth to saturated zone	1.00 1.00
CnbA: Coloma-----	85	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Somewhat limited: Too sandy Droughty	0.50 0.22
CnbB: Coloma-----	85	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Somewhat limited: Too sandy Droughty	0.50 0.22
CnbC: Coloma-----	85	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Somewhat limited: Too sandy Droughty	0.50 0.22
CnbD: Coloma-----	85	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Somewhat limited: Slope Too sandy Droughty	0.96 0.50 0.22
CrrA: Coupee-----	85	Not limited		Not limited		Not limited	
CvdA: Crosier-----	85	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CvdB:							
Crosier-----	80	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
CwkA:							
Crumstown-----	80	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Somewhat limited: Droughty	0.01
CwkB:							
Crumstown-----	80	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Somewhat limited: Droughty	0.01
DcrA:							
Del Rey-----	85	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
EchAN:							
Edwards, drained---	80	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone Carbonate content	1.00 1.00 1.00
EchAU:							
Edwards, undrained--	75	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00 1.00	Very limited: Ponding Content of organic matter Depth to saturated zone Carbonate content	1.00 1.00 1.00 1.00 1.00
EcrAN:							
Edselton, drained---	70	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone Carbonate content	1.00 1.00 1.00
EcrAU:							
Edselton, undrained-	70	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00 1.00	Very limited: Ponding Content of organic matter Depth to saturated zone Carbonate content	1.00 1.00 1.00 1.00 1.00
EmeA:							
Elston-----	85	Not limited		Not limited		Not limited	
GczA:							
Gilford-----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GdnA:							
Gilford-----	75	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
HfbAN:							
Henrietta, drained--	80	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00	Content of	1.00
		saturated zone		saturated zone		organic matter	
		Content of	1.00	Content of	1.00	Depth to	1.00
		organic matter		organic matter		saturated zone	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
HfbAU:							
Henrietta, undrained	75	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00	Ponding	1.00
		saturated zone		saturated zone		Content of	1.00
		Content of	1.00	Content of	1.00	organic matter	
		organic matter		organic matter		Depth to	1.00
		Ponding	1.00	Ponding	1.00	saturated zone	
HkkA:							
Hillsdale-----	80	Not limited		Not limited		Not limited	
HkkB:							
Hillsdale-----	80	Not limited		Not limited		Not limited	
HknC2:							
Hillsdale-----	55	Not limited		Not limited		Not limited	
Oshtemo-----	30	Somewhat limited:		Somewhat limited:		Not limited	
		Too sandy	0.01	Too sandy	0.01		
HknD2:							
Hillsdale-----	55	Not limited		Not limited		Somewhat limited:	
						Slope	0.96
Oshtemo-----	30	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Too sandy	0.01	Too sandy	0.01	Slope	0.96
HkpC2:							
Hillsdale-----	55	Not limited		Not limited		Not limited	
Tracy-----	30	Not limited		Not limited		Not limited	
HkpD2:							
Hillsdale-----	55	Not limited		Not limited		Somewhat limited:	
						Slope	0.96
Tracy-----	30	Not limited		Not limited		Somewhat limited:	
						Slope	0.96
HtbAN:							
Houghton, drained--	75	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00	Ponding	1.00
		saturated zone		saturated zone		Depth to	1.00
		Ponding	1.00	Ponding	1.00	saturated zone	



Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails	Value	Off-road motorcycle trails	Value	Golf fairways	Value
		Rating class and limiting features		Rating class and limiting features		Rating class and limiting features	
HtbAU: Houghton, undrained-	75	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Ponding Content of organic matter Depth to saturated zone	1.00 1.00 1.00
JaaAK: Jamestown-----	80	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Flooding	1.00 0.60
MfaA: Martinsville-----	70	Not limited		Not limited		Not limited	
MfaB2: Martinsville-----	70	Not limited		Not limited		Not limited	
MfaC2: Martinsville-----	80	Not limited		Not limited		Not limited	
MfrAN: Madaus, drained----	80	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone Carbonate content Droughty	1.00 1.00 1.00 0.06
MfrAU: Madaus, undrained---	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone Carbonate content Droughty	1.00 1.00 1.00 0.06
MgcA: Maumee-----	80	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Droughty	1.00 1.00 1.00 0.01
MgdAN: Martisco, drained---	75	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Ponding Content of organic matter Depth to saturated zone Carbonate content	1.00 1.00 1.00 1.00
MhaA: Maumee-----	80	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Droughty	1.00 1.00 1.00 0.01

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MhbA: Maumee-----	90	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone Droughty	1.00 1.00 0.01
MmbC2: Miami-----	80	Not limited		Not limited		Not limited	
MmdC3: Miami-----	80	Not limited		Not limited		Not limited	
MmdD3: Miami-----	80	Not limited		Not limited		Somewhat limited: Slope	0.96
MouA: Milford-----	85	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
MsaA: Mishawaka-----	95	Somewhat limited: Too sandy	0.04	Somewhat limited: Too sandy	0.04	Not limited	
MtsB2: Morley-----	75	Not limited		Not limited		Very limited: Carbonate content Depth to saturated zone Droughty	1.00 0.19 0.01
MtsC2: Morley-----	80	Very limited: Water erosion	1.00	Very limited: Water erosion	1.00	Very limited: Carbonate content Depth to saturated zone Slope Droughty	1.00 0.19 0.04 0.01
MubD3: Morley-----	80	Not limited		Not limited		Very limited: Slope Carbonate content Depth to saturated zone Droughty	1.00 1.00 0.19 0.10
MvhAN: Moston, drained----	80	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MvhAU: Moston, undrained---	75	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Ponding Content of organic matter Depth to saturated zone	1.00 1.00 1.00
MvkA: Morocco-----	85	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Droughty	1.00 0.15
MwzAN: Muskego, drained---	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
MwzAU: Muskego, undrained--	70	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Ponding Content of organic matter Depth to saturated zone	1.00 1.00 1.00
OkrA: Oshtemo-----	80	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Not limited	
OkrB: Oshtemo-----	80	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Not limited	
OkrC2: Oshtemo-----	80	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Not limited	
OkrD: Oshtemo-----	80	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Somewhat limited: Slope	0.96
OlcA: Oshtemo-----	80	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Not limited	
OlcB: Oshtemo-----	80	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Not limited	
OlcC2: Oshtemo-----	80	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Not limited	
OlcD: Oshtemo-----	80	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Somewhat limited: Slope	0.96

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails	Off-road motorcycle trails		Golf fairways		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OmgA: Osolo-----	85	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Somewhat limited: Droughty	0.07
PaaAN: Palms, drained-----	80	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Content of organic matter Depth to saturated zone Ponding	1.00 1.00 1.00
PaaAU: Palms, undrained----	75	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Ponding Content of organic matter Depth to saturated zone	1.00 1.00 1.00
Pmg: Pits, gravel-----	100	Not rated		Not rated		Not rated	
Px1A: Psammaquents-----	85	Not rated		Not rated		Not rated	
Pxo: Psammments-----	85	Not rated		Not rated		Not rated	
QuiA: Quinn-----	80	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
QuijA: Quinn-----	75	Very limited: Depth to saturated zone Too sandy	1.00 0.04	Very limited: Depth to saturated zone Too sandy	1.00 0.04	Very limited: Depth to saturated zone	1.00
RenA: Rensselaer-----	85	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
ReyA: Rensselaer-----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
RopA: Riddles-----	50	Not limited		Not limited		Not limited	
Oshtemo-----	35	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Not limited	

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RopB:							
Riddles-----	50	Not limited		Not limited		Not limited	
Oshtemo-----	35	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Not limited	
RopC2:							
Riddles-----	50	Not limited		Not limited		Not limited	
Oshtemo-----	35	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Not limited	
RopD2:							
Riddles-----	50	Not limited		Not limited		Somewhat limited: Slope	0.96
Oshtemo-----	35	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Somewhat limited: Slope	0.96
RoqB:							
Riddles-----	55	Not limited		Not limited		Not limited	
Metea-----	30	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Not limited	
RoqC2:							
Riddles-----	55	Not limited		Not limited		Not limited	
Metea-----	30	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Not limited	
RoqD2:							
Riddles-----	50	Not limited		Not limited		Somewhat limited: Slope	0.96
Metea-----	30	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Somewhat limited: Slope	0.96
SdzA:							
Selfridge-----	50	Somewhat limited: Too sandy Depth to saturated zone	0.50 0.44	Somewhat limited: Too sandy Depth to saturated zone	0.50 0.44	Somewhat limited: Depth to saturated zone	0.75
Crosier-----	35	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
SdzaB:							
Selfridge-----	50	Somewhat limited: Too sandy Depth to saturated zone	0.50 0.44	Somewhat limited: Too sandy Depth to saturated zone	0.50 0.44	Somewhat limited: Depth to saturated zone	0.75
Brems-----	35	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy	0.59	Somewhat limited: Droughty	0.01
SesA:							
Schoolcraft-----	80	Not limited		Not limited		Not limited	

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Sn1A: Southwest-----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
TmpA: Tracy-----	80	Not limited		Not limited		Not limited	
TmpB: Tracy-----	80	Not limited		Not limited		Not limited	
TmpC2: Tracy-----	80	Not limited		Not limited		Not limited	
TmpD: Tracy-----	80	Not limited		Not limited		Somewhat limited: Slope	0.96
TnwA: Troxel-----	80	Not limited		Not limited		Not limited	
TxuA: Tyner-----	85	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Somewhat limited: Droughty	0.12
TxuB: Tyner-----	85	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Somewhat limited: Droughty	0.12
TxuC: Tyner-----	85	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Somewhat limited: Droughty	0.12
TxuD: Tyner-----	85	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Somewhat limited: Slope Droughty	0.96 0.12
TxuF: Tyner-----	80	Very limited: Slope Too sandy	1.00 0.92	Somewhat limited: Too sandy Slope	0.92 0.44	Very limited: Slope Droughty	1.00 0.12
Uam: Udorthents, loamy---	100	Not rated		Not rated		Not rated	
UdeA: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Not limited		Not limited		Not limited	
UdeB: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Not limited		Not limited		Not limited	
UdeC: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Not limited		Not limited		Not limited	



Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UdkA: Urban land-----	50	Not rated		Not rated		Not rated	
Brady-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
UdzA: Urban land-----	50	Not rated		Not rated		Not rated	
Auten-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
UeaA: Urban land-----	50	Not rated		Not rated		Not rated	
Crosier-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
UeqA: Urban land-----	50	Not rated		Not rated		Not rated	
Gilford-----	40	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
UewA: Urban land-----	50	Not rated		Not rated		Not rated	
Brems-----	25	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy	0.59	Somewhat limited: Droughty	0.01
Morocco-----	15	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Droughty	1.00 0.15
UfbA: Urban land-----	50	Not rated		Not rated		Not rated	
Brookston-----	40	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
UfhA: Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Somewhat limited: Too sandy Droughty	0.50 0.22
UfhB: Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Somewhat limited: Too sandy Droughty	0.50 0.22

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UfhC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Very limited: Too sandy	1.00	Very limited: Too sandy	1.00	Somewhat limited: Too sandy Droughty	0.50 0.22
UfmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coupee-----	40	Not limited		Not limited		Not limited	
UfrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Del Rey-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
UftA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Elston-----	40	Not limited		Not limited		Not limited	
UfzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Mishawaka-----	45	Somewhat limited: Too sandy	0.04	Somewhat limited: Too sandy	0.04	Not limited	
UgaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Morocco-----	40	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Too sandy	1.00 0.88	Very limited: Depth to saturated zone Droughty	1.00 0.15
UglA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Osolo-----	40	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Somewhat limited: Droughty	0.07
UgrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Rensselaer-----	40	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
UgsA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Not limited	
Oshtemo-----	15	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Not limited	

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UgsB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Not limited	
Oshtemo-----	15	Somewhat limited: Too sandy	0.02	Somewhat limited: Too sandy	0.02	Not limited	
UgvA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Somewhat limited: Droughty	0.12
UgvB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Somewhat limited: Droughty	0.12
UgvC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Somewhat limited: Droughty	0.12
UgvD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Somewhat limited: Too sandy	0.92	Somewhat limited: Too sandy	0.92	Somewhat limited: Slope Droughty	0.96 0.12
UhmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Not limited		Not limited		Not limited	
UhmB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Not limited		Not limited		Not limited	
UhoC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Not limited		Not limited		Not limited	
Oshtemo-----	15	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Not limited	
UhoD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Not limited		Not limited		Somewhat limited: Slope	0.96
Oshtemo-----	15	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Somewhat limited: Slope	0.96

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UhpC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Not limited		Not limited		Not limited	
Tracy-----	15	Not limited		Not limited		Not limited	
UhpD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Not limited		Not limited		Somewhat limited: Slope	0.96
Tracy-----	15	Not limited		Not limited		Somewhat limited: Slope	0.96
UhwA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Not limited		Not limited		Not limited	
UhwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Not limited		Not limited		Not limited	
UhwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Not limited		Not limited		Not limited	
UkaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Maumee-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Too sandy	0.50	Too sandy	0.50	Droughty	0.01
UkeA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Milford-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
Ukx A:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Not limited	
Ukx B:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Not limited	

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UkxC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Somewhat limited: Too sandy	0.01	Somewhat limited: Too sandy	0.01	Not limited	
UmfB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Not limited	
Metea-----	15	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Not limited	
UmfC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Not limited	
Metea-----	15	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Not limited	
UmfD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Somewhat limited: Slope	0.96
Metea-----	15	Somewhat limited: Too sandy	0.50	Somewhat limited: Too sandy	0.50	Somewhat limited: Slope	0.96
UmpA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Schoolcraft-----	40	Not limited		Not limited		Not limited	
UmuA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Southwest-----	40	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
UmwA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Not limited		Not limited		Not limited	
UmwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Not limited		Not limited		Not limited	
UmwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Not limited		Not limited		Not limited	

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UmwD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Not limited		Not limited		Somewhat limited: Slope	0.96
UmxA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Troxel-----	40	Not limited		Not limited		Not limited	
UnoA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Whitaker-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
UnqB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Williamstown-----	25	Not limited		Not limited		Somewhat limited: Depth to saturated zone	0.19
Crosier-----	15	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
UntA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Wunabuna, drained---	40	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
Usl:							
Udorthents, rubbish-	100	Not rated		Not rated		Not rated	
W:							
Water-----	100	Not rated		Not rated		Not rated	
WcnAI:							
Waterford-----	80	Very limited: Depth to saturated zone Flooding	1.00 0.40	Very limited: Depth to saturated zone Flooding	1.00 0.40	Very limited: Flooding Depth to saturated zone	1.00 1.00
WoaA:							
Williamstown-----	85	Not limited		Not limited		Somewhat limited: Depth to saturated zone	0.19
WoaB2:							
Williamstown-----	85	Not limited		Not limited		Somewhat limited: Depth to saturated zone	0.19

Table 11b.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WoaC2: Williamstown-----	80	Not limited		Not limited		Somewhat limited: Depth to saturated zone	0.19
WobB: Williamstown-----	50	Not limited		Not limited		Somewhat limited: Depth to saturated zone	0.19
Crosier-----	30	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
WrxAN: Wunabuna, drained---	85	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
WtbA: Whitaker-----	75	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
WujB: Williamstown-----	45	Not limited		Not limited		Somewhat limited: Depth to saturated zone	0.19
Moon-----	40	Somewhat limited: Too sandy	0.59	Somewhat limited: Too sandy	0.59	Somewhat limited: Depth to saturated zone	0.03



Table 12.--Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable.)

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AahAK:										
Absecon-----	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
AatAN:										
Ackerman, drained-	Poor	Poor	Poor	Good	Poor	Good	Good	Poor	Very poor.	Good.
AbhAN:										
Adrian, drained---	Fair	Poor	Poor	Good	Poor	Good	Good	Poor	Very poor.	Good.
AbhAU:										
Adrian, undrained-	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
ApuAN:										
Antung, drained---	Fair	Poor	Poor	Good	Poor	Good	Good	Poor	Very poor.	Good.
AxvA:										
Auten-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
BaaA:										
Bainter-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BaaB:										
Bainter-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BaaC2:										
Bainter-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BbmA:										
Baugo-----	Fair	Good	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
BmgA:										
Blount-----	Fair	Good	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
BshA:										
Brady-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
BsxA:										
Brems-----	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Poor.
Morocco-----	Poor	Fair	Good	Good	Fair	Fair	Very poor.	Fair	Fair	Poor.
BteA:										
Brems-----	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Poor.
BuuA:										
Brookston-----	Fair	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
CmbAI:										
Cohoctah-----	Poor	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good.
CnbA:										
Coloma-----	Fair	Fair	Fair	Fair	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
CnbB:										
Coloma-----	Fair	Fair	Fair	Fair	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
CnbC:										
Coloma-----	Poor	Fair	Fair	Fair	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
CnbD:										
Coloma-----	Poor	Fair	Fair	Fair	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
CrrA:										
Coupee-----	Good	Good	Fair	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CvdA:										
Crosier-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
CvdB:										
Crosier-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
CwkA:										
Crumstown-----	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
CwkB:										
Crumstown-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Fair	Very poor.
DcrA:										
Del Rey-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
EchAN:										
Edwards, drained--	Poor	Poor	Poor	Good	Poor	Good	Good	Poor	Very poor.	Good.
EchAU:										
Edwards, undrained	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
EcrAN:										
Edselton, drained-	Poor	Poor	Poor	Good	Poor	Good	Good	Poor	Very poor.	Good.
EcrAU:										
Edselton, undrained-----	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
EmeA:										
Elston-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Gc2A:										
Gilford-----	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
GdnA:										
Gilford-----	Fair	Poor	Poor	Poor	Poor	Good	Good	Fair	Poor	Good.
HfbAN:										
Henrietta, drained	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Fair	Good.
HfbAU:										
Henrietta, undrained-----	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
HkkA:										
Hillsdale-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HkkB:										
Hillsdale-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HknC2:										
Hillsdale-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Oshtemo-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HknD2:										
Hillsdale-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Oshtemo-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HkpC2:										
Hillsdale-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Tracy-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HkpD2:										
Hillsdale-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Tracy-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HtbAN:										
Houghton, drained-	Fair	Poor	Poor	Good	Poor	Good	Good	Poor	Very poor.	Good.
HtbAU:										
Houghton, undrained-----	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
JaaAK:										
Jamestown-----	Fair	Good	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
MfaA:										
Martinsville-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MfaB2:										
Martinsville-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MfaC2:										
Martinsville-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MfrAN:										
Madaus, drained---	Poor	Poor	Poor	Good	Poor	Good	Good	Poor	Very poor.	Good.
MfrAU:										
Madaus, undrained-	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
MgcA:										
Maumee-----	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MgdAN:										
Martisco, drained-	Very poor.	Poor	Poor	Good	Poor	Good	Good	Poor	Poor	Good.
MhaA:										
Maumee-----	Poor	Fair	Fair	Good	Fair	Fair	Good	Fair	Fair	Fair.
MhbA:										
Maumee-----	Poor	Fair	Fair	Good	Fair	Fair	Good	Fair	Fair	Fair.
MmbC2:										
Miami-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MmdC3:										
Miami-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MmdD3:										
Miami-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MouA:										
Milford-----	Fair	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good.
MsaA:										
Mishawaka-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
MtsB2:										
Morley-----	Good	Good	Fair	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MtsC2:										
Morley-----	Fair	Good	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
MubD3:										
Morley-----	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

[illegible]

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Px1A: Psammaquents.										
Pxo: Psammments.										
QuiA: Quinn-----	Poor	Fair	Poor	Fair	Fair	Good	Fair	Poor	Fair	Fair.
QujA: Quinn-----	Poor	Fair	Poor	Fair	Fair	Good	Fair	Poor	Fair	Fair.
RenA: Rensselaer-----	Fair	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good.
ReyA: Rensselaer-----	Fair	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good.
RopA: Riddles-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Oshtemo-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
RopB: Riddles-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Oshtemo-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
RopC2: Riddles-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Oshtemo-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
RopD2: Riddles-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Oshtemo-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
RoqB: Riddles-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Metea-----	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
RoqC2: Riddles-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Metea-----	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
RoqD2: Riddles-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
RoqD2:										
Metea-----	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SdzA:										
Selfridge-----	Fair	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Fair.
Crosier-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
SdzaB:										
Selfridge-----	Fair	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
Brems-----	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Poor.
SesA:										
Schoolcraft-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Sn1A:										
Southwest-----	Fair	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good.
TmpA:										
Tracy-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
TmpB:										
Tracy-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
TmpC2:										
Tracy-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
TmpD:										
Tracy-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
TnwA:										
Troxel-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
TxuA:										
Tyner-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
TxuB:										
Tyner-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
TxuC:										
Tyner-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
TxuD:										
Tyner-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
TxuF:										
Tyner-----	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.



Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Uam: Udorthents, loamy.										
UdeA: Urban land.										
Bainter-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UdeB: Urban land.										
Bainter-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UdeC: Urban land.										
Bainter-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UdkA: Urban land.										
Brady-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
UdzA: Urban land.										
Auten-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
UeaA: Urban land.										
Crosier-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
UeqA: Urban land.										
Gilford-----	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
UewA: Urban land.										
Brems-----	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Poor.
Morocco-----	Poor	Fair	Good	Good	Fair	Fair	Very poor.	Fair	Fair	Poor.
UfbA: Urban land.										
Brookston-----	Fair	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good.
UfhA: Urban land.										
Coloma-----	Fair	Fair	Fair	Fair	Good	Very poor.	Very poor.	Fair	Fair	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
UfhB: Urban land.										
Coloma-----	Fair	Fair	Fair	Fair	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
UfhC: Urban land.										
Coloma-----	Poor	Fair	Fair	Fair	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
UfmA: Urban land.										
Coupee-----	Good	Good	Fair	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UfrA: Urban land.										
Del Rey-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
UftA: Urban land.										
Elston-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UfzA: Urban land.										
Mishawaka-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
UgaA: Urban land.										
Morocco-----	Poor	Fair	Good	Fair	Fair	Fair	Very poor.	Fair	Fair	Poor.
UglA: Urban land.										
Osolo-----	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Good	Very poor.
UgrA: Urban land.										
Rensselaer-----	Fair	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good.
UgsA: Urban land.										
Riddles-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Oshtemo-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
UgsB: Urban land.										
Riddles-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Oshtemo-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
UgvA: Urban land.										
Tyner-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
UgvB: Urban land.										
Tyner-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
UgvC: Urban land.										
Tyner-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
UgvD: Urban land.										
Tyner-----	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
UhmA: Urban land.										
Hillsdale-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UhmB: Urban land.										
Hillsdale-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UhoC: Urban land.										
Hillsdale-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Oshtemo-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
UhoD: Urban land.										
Hillsdale-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Oshtemo-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
UhpC: Urban land.										
Hillsdale-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Tracy-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
UhpD: Urban land.										
Hillsdale-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Tracy-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
UhwA: Urban land.										
Martinsville-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UhwB: Urban land.										
Martinsville-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UhwC: Urban land.										
Martinsville-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
UkaA: Urban land.										
Maumee-----	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
UkeA: Urban land.										
Milford-----	Fair	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good.
UkxA: Urban land.										
Oshtemo-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UkxB: Urban land.										
Oshtemo-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UkxC: Urban land.										
Oshtemo-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
UmfB: Urban land.										
Riddles-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Metea-----	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
UmfC: Urban land.										
Riddles-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Metea-----	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
UmfD: Urban land.										
Riddles-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Metea-----	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
UmpA: Urban land.										
Schoolcraft-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UmuA: Urban land.										
Southwest-----	Fair	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good.
UmwA: Urban land.										
Tracy-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UmwB: Urban land.										
Tracy-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UmwC: Urban land.										
Tracy-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
UmwD: Urban land.										
Tracy-----	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
UmxA: Urban land.										
Troxel-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UnoA: Urban land.										
Whitaker-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
UnqB: Urban land.										
Williamstown-----	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Crosier-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
UntA: Urban land.										
Wunabuna, drained-	Fair	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good.
Usl: Udorthents, rubbish.										
W: Water.										
WcnAI: Waterford-----	Very poor.	Poor	Fair	Good	Good	Fair	Poor	Poor	Fair	Poor.
WoaA: Williamstown-----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
WoaB2: Williamstown-----	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Very poor.
WoaC2: Williamstown-----	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WobB: Williamstown-----	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Crosier-----	Fair	Good	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
WrxAN: Wunabuna, drained-	Fair	Fair	Fair	Good	Fair	Good	Good	Fair	Fair	Good.
WtbA: Whitaker-----	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.

Table 12.--Wildlife Habitat--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
WujB: Williamstown-----	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Moon-----	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.



Table 13a.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AahAK: Abscota-----	80	Very limited: Flooding	1.00	Very limited: Flooding Depth to saturated zone	1.00 0.95	Very limited: Flooding	1.00
AatAN: Ackerman, drained---	85	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
AbhAN: Adrian, drained----	75	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00
AbhAU: Adrian, undrained---	75	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00
ApuAN: Antung, drained----	75	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
AxvA: Auten-----	82	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50
BaaA: Bainter-----	85	Not limited		Not limited		Not limited	
BaaB: Bainter-----	85	Not limited		Not limited		Not limited	
BaaC2: Bainter-----	85	Not limited		Not limited		Somewhat limited: Slope	0.88

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BbmA: Baugo-----	85	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50
BmgA: Blount-----	85	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50
BshA: Brady-----	90	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
BsxA: Brems-----	50	Not limited		Very limited: Depth to saturated zone	1.00	Not limited	
Morocco-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
BteA: Brems-----	80	Not limited		Very limited: Depth to saturated zone	1.00	Not limited	
BuuA: Brookston-----	80	Very limited: Ponding Depth to saturated zone Shrink-swell	1.00 1.00  0.50	Very limited: Ponding Depth to saturated zone Shrink-swell	1.00 1.00  0.50	Very limited: Ponding Depth to saturated zone Shrink-swell	1.00 1.00  0.50
CmbAI: Cohoctah-----	75	Very limited: Flooding Depth to saturated zone	1.00  1.00	Very limited: Flooding Depth to saturated zone	1.00  1.00	Very limited: Flooding Depth to saturated zone	1.00  1.00
CnbA: Coloma-----	85	Not limited		Not limited		Not limited	
CnbB: Coloma-----	85	Not limited		Not limited		Not limited	
CnbC: Coloma-----	85	Not limited		Not limited		Somewhat limited: Slope	0.88
CnbD: Coloma-----	85	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
CrrA: Coupee-----	85	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CvdA: Crosier-----	85	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50
CvdB: Crosier-----	80	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50
CwkA: Crumstown-----	80	Not limited		Somewhat limited: Depth to saturated zone	0.24	Not limited	
CwkB: Crumstown-----	80	Not limited		Somewhat limited: Depth to saturated zone	0.24	Not limited	
DcrA: Del Rey-----	85	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50	Very limited: Depth to saturated zone Shrink-swell	1.00  0.50
EchAN: Edwards, drained---	80	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00
EchAU: Edwards, undrained--	75	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00
EcrAN: Edselton, drained---	70	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00
EcrAU: Edselton, undrained-	70	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00
EmeA: Elston-----	85	Not limited		Not limited		Not limited	

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GczA: Gilford-----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
GdnA: Gilford-----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
HfbAN: Henrietta, drained--	80	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
HfbAU: Henrietta, undrained	75	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00
HkkA: Hillsdale-----	80	Not limited		Not limited		Not limited	
HkkB: Hillsdale-----	80	Not limited		Not limited		Not limited	
HknC2: Hillsdale-----	55	Not limited		Not limited		Somewhat limited: Slope	0.88
Oshtemo-----	30	Not limited		Not limited		Somewhat limited: Slope	0.88
HknD2: Hillsdale-----	55	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Oshtemo-----	30	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
HkpC2: Hillsdale-----	55	Not limited		Not limited		Somewhat limited: Slope	0.88
Tracy-----	30	Not limited		Not limited		Somewhat limited: Slope	0.88
HkpD2: Hillsdale-----	55	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Tracy-----	30	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HtbAN: Houghton, drained---	75	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00 1.00
HtbAU: Houghton, undrained-	75	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00 1.00
JaaAK: Jamestown-----	80	Very limited: Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited: Flooding Depth to saturated zone	1.00 1.00 1.00	Very limited: Flooding Depth to saturated zone	1.00 1.00 1.00
MfaA: Martinsville-----	70	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50
MfaB2: Martinsville-----	70	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50
MfaC2: Martinsville-----	80	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Slope Shrink-swell	0.88 0.50
MfrAN: Madaus, drained----	80	Very limited: Ponding Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00 1.00
MfrAU: Madaus, undrained---	75	Very limited: Ponding Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00 1.00
MgcA: Maumee-----	80	Very limited: Depth to saturated zone Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00 1.00
MgdAN: Martisco, drained---	75	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00 1.00

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MhaA: Maumee-----	80	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
MhbA: Maumee-----	90	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
MmbC2: Miami-----	80	Somewhat limited: Shrink-swell	0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Somewhat limited: Slope Shrink-swell	0.88 0.50
MmdC3: Miami-----	80	Somewhat limited: Shrink-swell	0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Somewhat limited: Slope Shrink-swell	0.88 0.50
MmdD3: Miami-----	80	Somewhat limited: Slope Shrink-swell	0.96 0.50	Very limited: Depth to saturated zone Slope Shrink-swell	1.00 0.96 0.50	Very limited: Slope Shrink-swell	1.00 0.50
MouA: Milford-----	85	Very limited: Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.50
MsaA: Mishawaka-----	95	Not limited		Not limited		Not limited	
MtsB2: Morley-----	75	Very limited: Shrink-swell Depth to saturated zone	1.00 0.39	Very limited: Depth to saturated zone Shrink-swell	1.00 1.00	Very limited: Shrink-swell Depth to saturated zone	1.00 0.39
MtsC2: Morley-----	80	Very limited: Shrink-swell Depth to saturated zone Slope	1.00 0.39 0.04	Very limited: Depth to saturated zone Shrink-swell Slope	1.00 1.00 0.04	Very limited: Shrink-swell Slope Depth to saturated zone	1.00 1.00 0.39
MubD3: Morley-----	80	Very limited: Shrink-swell Slope Depth to saturated zone	1.00 1.00 0.39	Very limited: Depth to saturated zone Shrink-swell Slope	1.00 1.00 1.00 1.00	Very limited: Slope Shrink-swell Depth to saturated zone	1.00 1.00 0.39

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MvhAN: Moston, drained----	80	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter Shrink-swell	1.00 1.00 1.00  1.00 0.50	Very limited: Ponding Subsidence Depth to saturated zone Shrink-swell	1.00 1.00 1.00  0.50	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter Shrink-swell	1.00 1.00 1.00  1.00 0.50
MvhAU: Moston, undrained---	75	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter Shrink-swell	1.00 1.00 1.00  1.00 0.50	Very limited: Ponding Subsidence Depth to saturated zone Shrink-swell	1.00 1.00 1.00  0.50	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter Shrink-swell	1.00 1.00 1.00  1.00 0.50
MvkA: Morocco-----	85	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
MwzAN: Muskego, drained----	75	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00  1.00	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter Shrink-swell	1.00 1.00 1.00  1.00 0.50	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00  1.00
MwzAU: Muskego, undrained--	70	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00  1.00	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter Shrink-swell	1.00 1.00 1.00  1.00 0.50	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00  1.00
OkrA: Oshtemo-----	80	Not limited		Not limited		Not limited	
OkrB: Oshtemo-----	80	Not limited		Not limited		Not limited	
OkrC2: Oshtemo-----	80	Not limited		Not limited		Somewhat limited: Slope	0.88
OkrD: Oshtemo-----	80	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
OlcA: Oshtemo-----	80	Not limited		Not limited		Not limited	



Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OlcB: Oshtemo-----	80	Not limited		Not limited		Not limited	
OlcC2: Oshtemo-----	80	Not limited		Not limited		Somewhat limited: Slope	0.88
OlcD: Oshtemo-----	80	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
OmgA: Osolo-----	85	Not limited		Somewhat limited: Depth to saturated zone	0.24	Not limited	
PaaAN: Palms, drained-----	80	Very limited: Subsidence Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00 1.00	Very limited: Subsidence Depth to saturated zone Ponding	1.00 1.00 1.00	Very limited: Subsidence Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00 1.00
PaaAU: Palms, undrained----	75	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Subsidence Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00
Pmg: Pits, gravel-----	100	Not rated		Not rated		Not rated	
Px1A: Psammaquents-----	85	Not rated		Not rated		Not rated	
Pxo: Psammments-----	85	Not rated		Not rated		Not rated	
QuiA: Quinn-----	80	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
QuijA: Quinn-----	75	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
RenA: Rensselaer-----	85	Very limited: Ponding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone Shrink-swell	1.00 1.00 0.50

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ReyA:							
Rensselaer-----	75	Very limited: Ponding	1.00	Very limited: Ponding	1.00	Very limited: Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	0.50			Shrink-swell	0.50
RopA:							
Riddles-----	50	Not limited		Not limited		Not limited	
Oshtemo-----	35	Not limited		Not limited		Not limited	
RopB:							
Riddles-----	50	Not limited		Not limited		Not limited	
Oshtemo-----	35	Not limited		Not limited		Not limited	
RopC2:							
Riddles-----	50	Not limited		Not limited		Somewhat limited: Slope	0.88
Oshtemo-----	35	Not limited		Not limited		Somewhat limited: Slope	0.88
RopD2:							
Riddles-----	50	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Oshtemo-----	35	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
RoqB:							
Riddles-----	55	Not limited		Not limited		Not limited	
Metea-----	30	Not limited		Not limited		Not limited	
RoqC2:							
Riddles-----	55	Not limited		Not limited		Somewhat limited: Slope	0.88
Metea-----	30	Not limited		Not limited		Somewhat limited: Slope	0.88
RoqD2:							
Riddles-----	50	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Metea-----	30	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
SdzA:							
Selfridge-----	50	Somewhat limited: Depth to saturated zone	0.98	Very limited: Depth to saturated zone	1.00	Somewhat limited: Depth to saturated zone	0.98
Crosier-----	35	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SdzaB: Selfridge-----	50	Somewhat limited: Depth to saturated zone	0.98	Very limited: Depth to saturated zone	1.00	Somewhat limited: Depth to saturated zone	0.98
Brems-----	35	Not limited		Very limited: Depth to saturated zone	1.00	Not limited	
SesA: Schoolcraft-----	80	Somewhat limited: Shrink-swell	0.50	Not limited		Somewhat limited: Shrink-swell	0.50
Sn1A: Southwest-----	75	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Shrink-swell	0.06	Shrink-swell	0.06	Shrink-swell	0.06
TmpA: Tracy-----	80	Not limited		Not limited		Not limited	
TmpB: Tracy-----	80	Not limited		Not limited		Not limited	
TmpC2: Tracy-----	80	Not limited		Not limited		Somewhat limited: Slope	0.88
TmpD: Tracy-----	80	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
TnwA: Troxel-----	80	Not limited		Not limited		Not limited	
TxuA: Tyner-----	85	Not limited		Not limited		Not limited	
TxuB: Tyner-----	85	Not limited		Not limited		Not limited	
TxuC: Tyner-----	85	Not limited		Not limited		Somewhat limited: Slope	0.88
TxuD: Tyner-----	85	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
TxuF: Tyner-----	80	Very limited: Slope	1.00	Very limited: Slope	1.00	Very limited: Slope	1.00
Uam: Udorthents, loamy---	100	Not rated		Not rated		Not rated	

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UdeA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Not limited		Not limited		Not limited	
UdeB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Not limited		Not limited		Not limited	
UdeC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Not limited		Not limited		Somewhat limited: Slope	0.88
UdkA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brady-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
UdzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Auten-----	40	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50
UeaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Crosier-----	40	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50
UeqA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Gilford-----	40	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
UewA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brems-----	25	Not limited		Very limited: Depth to saturated zone	1.00	Not limited	
Morocco-----	15	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UfbA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brookston-----	40	Very limited: Ponding	1.00	Very limited: Ponding	1.00	Very limited: Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
UfhA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Not limited		Not limited		Not limited	
UfhB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Not limited		Not limited		Not limited	
UfhC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Not limited		Not limited		Somewhat limited: Slope	0.88
UfmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coupee-----	40	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50
UfrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Del Rey-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
UftA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Elston-----	40	Not limited		Not limited		Not limited	
UfzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Mishawaka-----	45	Not limited		Not limited		Not limited	
UgaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Morocco-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ug1A:							
Urban land-----	50	Not rated		Not rated		Not rated	
Osolo-----	40	Not limited		Somewhat limited: Depth to saturated zone	0.24	Not limited	
UgrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Rensselaer-----	40	Very limited: Ponding Depth to saturated zone Shrink-swell	1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone Shrink-swell	1.00 1.00 0.50
UgsA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Not limited	
Oshtemo-----	15	Not limited		Not limited		Not limited	
UgsB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Not limited	
Oshtemo-----	15	Not limited		Not limited		Not limited	
UgvA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Not limited		Not limited		Not limited	
UgvB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Not limited		Not limited		Not limited	
UgvC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Not limited		Not limited		Somewhat limited: Slope	0.88
UgvD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
UhmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Not limited		Not limited		Not limited	
UhmB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Not limited		Not limited		Not limited	

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UhoC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Not limited		Not limited		Somewhat limited: Slope	0.88
Oshtemo-----	15	Not limited		Not limited		Somewhat limited: Slope	0.88
UhoD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Oshtemo-----	15	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
UhpC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Not limited		Not limited		Somewhat limited: Slope	0.88
Tracy-----	15	Not limited		Not limited		Somewhat limited: Slope	0.88
UhpD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Tracy-----	15	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
UhwA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50
UhwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50
UhwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Slope Shrink-swell	0.88 0.50



Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UkaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Maumee-----	40	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
UkeA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Milford-----	40	Very limited: Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.50
UkxA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Not limited		Not limited		Not limited	
UkxB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Not limited		Not limited		Not limited	
UkxC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Not limited		Not limited		Somewhat limited: Slope	0.88
UmFB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Not limited	
Metea-----	15	Not limited		Not limited		Not limited	
UmFC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Somewhat limited: Slope	0.88
Metea-----	15	Not limited		Not limited		Somewhat limited: Slope	0.88
UmFD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
Metea-----	15	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UmpA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Schoolcraft-----	40	Somewhat limited: Shrink-swell	0.50	Not limited		Somewhat limited: Shrink-swell	0.50
UmuA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Southwest-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Shrink-swell	0.06	Shrink-swell	0.06	Shrink-swell	0.06
UmwA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Not limited		Not limited		Not limited	
UmwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Not limited		Not limited		Not limited	
UmwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Not limited		Not limited		Somewhat limited: Slope	0.88
UmwD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Very limited: Slope	1.00
UmxA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Troxel-----	40	Not limited		Not limited		Not limited	
UnoA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Whitaker-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Shrink-swell	0.50			Shrink-swell	0.50
UnqB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Williamstown-----	25	Somewhat limited: Shrink-swell	0.50	Very limited: Depth to saturated zone	1.00	Somewhat limited: Shrink-swell	0.50
		Depth to saturated zone	0.39	Shrink-swell	0.50	Depth to saturated zone	0.39

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UnqB:							
Crosier-----	15	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50
UntA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Wunabuna, drained---	40	Very limited: Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.50	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.50
Usl:							
Udorthents, rubbish-	100	Not rated		Not rated		Not rated	
W:							
Water-----	100	Not rated		Not rated		Not rated	
WcnAI:							
Waterford-----	80	Very limited: Flooding Depth to saturated zone	1.00 1.00	Very limited: Flooding Depth to saturated zone	1.00 1.00	Very limited: Flooding Depth to saturated zone	1.00 1.00
WoaA:							
Williamstown-----	85	Somewhat limited: Shrink-swell Depth to saturated zone	0.50 0.39	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Somewhat limited: Shrink-swell Depth to saturated zone	0.50 0.39
WoaB2:							
Williamstown-----	85	Somewhat limited: Shrink-swell Depth to saturated zone	0.50 0.39	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Somewhat limited: Shrink-swell Depth to saturated zone	0.50 0.39
WoaC2:							
Williamstown-----	80	Somewhat limited: Shrink-swell Depth to saturated zone	0.50 0.39	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Somewhat limited: Slope Shrink-swell Depth to saturated zone	0.88 0.50 0.39
WobB:							
Williamstown-----	50	Somewhat limited: Shrink-swell Depth to saturated zone	0.50 0.39	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Somewhat limited: Shrink-swell Depth to saturated zone	0.50 0.39
Crosier-----	30	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50

Table 13a.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WrxAN: Wunabuna, drained---	85	Very limited: Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.50	Very limited: Depth to saturated zone Content of organic matter Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding Shrink-swell	1.00 1.00 0.50
WtbA: Whitaker-----	75	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50
WujB: Williamstown-----	45	Somewhat limited: Shrink-swell Depth to saturated zone	0.50 0.39	Very limited: Depth to saturated zone Shrink-swell	1.00 0.50	Somewhat limited: Shrink-swell Depth to saturated zone	0.50 0.39
Moon-----	40	Somewhat limited: Depth to saturated zone	0.07	Very limited: Depth to saturated zone	1.00	Somewhat limited: Depth to saturated zone	0.07

Table 13b.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
<b>AahAK:</b>							
Abscota-----	80	Very limited: Flooding	1.00	Very limited: Cutbanks cave Depth to saturated zone Flooding	1.00 0.95 0.60	Somewhat limited: Droughty Flooding	0.66 0.60
<b>AatAN:</b>							
Ackerman, drained---	85	Very limited: Ponding Depth to saturated zone Frost action	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
<b>AbhAN:</b>							
Adrian, drained----	75	Very limited: Ponding Depth to saturated zone Subsidence Frost action	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Cutbanks cave Content of organic matter	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
<b>AbhAU:</b>							
Adrian, undrained---	75	Very limited: Ponding Depth to saturated zone Subsidence Frost action	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Cutbanks cave Content of organic matter	1.00 1.00 1.00 1.00	Very limited: Ponding Content of organic matter Depth to saturated zone	1.00 1.00 1.00
<b>ApuAN:</b>							
Antung, drained----	75	Very limited: Ponding Depth to saturated zone Frost action	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
<b>AxvA:</b>							
Auten-----	82	Very limited: Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited: Depth to saturated zone	1.00
<b>BaaA:</b>							
Bainter-----	85	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
<b>BaaB:</b>							
Bainter-----	85	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BaaC2: Bainter-----	85	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
BbmA: Baugo-----	85	Very limited: Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Cutbanks cave Depth to dense layer	1.00 1.00 0.50	Very limited: Depth to saturated zone	1.00
BmgA: Blount-----	85	Very limited: Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	1.00 0.50 0.10	Very limited: Depth to saturated zone	1.00
BshA: Brady-----	90	Very limited: Depth to saturated zone Frost action	1.00 1.00	Very limited: Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited: Depth to saturated zone	1.00
BsxA: Brems-----	50	Not limited		Very limited: Cutbanks cave Depth to saturated zone	1.00 1.00	Somewhat limited: Droughty	0.01
Morocco-----	40	Very limited: Depth to saturated zone Frost action	1.00 0.50	Very limited: Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited: Depth to saturated zone Droughty	1.00 0.15
BteA: Brems-----	80	Not limited		Very limited: Cutbanks cave Depth to saturated zone	1.00 1.00	Somewhat limited: Droughty	0.01
BuuA: Brookston-----	80	Very limited: Ponding Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 0.10	Very limited: Ponding Depth to saturated zone	1.00 1.00
CmbAI: Cohoctah-----	75	Very limited: Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited: Depth to saturated zone Cutbanks cave Flooding	1.00 1.00 0.80	Very limited: Flooding Depth to saturated zone	1.00 1.00

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CnbA: Coloma-----	85	Not limited		Very limited: Cutbanks cave	1.00	Somewhat limited: Too sandy Droughty	0.50 0.22
CnbB: Coloma-----	85	Not limited		Very limited: Cutbanks cave	1.00	Somewhat limited: Too sandy Droughty	0.50 0.22
CnbC: Coloma-----	85	Not limited		Very limited: Cutbanks cave	1.00	Somewhat limited: Too sandy Droughty	0.50 0.22
CnbD: Coloma-----	85	Somewhat limited: Slope	0.96	Very limited: Cutbanks cave Slope	1.00 0.96	Somewhat limited: Slope Too sandy Droughty	0.96 0.50 0.22
CrrA: Coupee-----	85	Very limited: Low strength Shrink-swell Frost action	1.00 0.50 0.50	Very limited: Cutbanks cave	1.00	Not limited	
CvdA: Crosier-----	85	Very limited: Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	1.00 0.50 0.10	Very limited: Depth to saturated zone	1.00
CvdB: Crosier-----	80	Very limited: Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	1.00 0.50 0.10	Very limited: Depth to saturated zone	1.00
CwkA: Crumstown-----	80	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave Depth to saturated zone	1.00 0.24	Somewhat limited: Droughty	0.01
CwkB: Crumstown-----	80	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave Depth to saturated zone	1.00 0.24	Somewhat limited: Droughty	0.01



Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DcrA: Del Rey-----	85	Very limited: Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited: Depth to saturated zone	1.00
EchAN: Edwards, drained----	80	Very limited: Ponding Depth to saturated zone Subsidence Frost action	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter Cutbanks cave	1.00 1.00 1.00 0.10	Very limited: Ponding Depth to saturated zone Carbonate content	1.00 1.00 1.00
EchAU: Edwards, undrained--	75	Very limited: Ponding Depth to saturated zone Subsidence Frost action	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter Cutbanks cave	1.00 1.00 1.00 0.10	Very limited: Ponding Content of organic matter Depth to saturated zone Carbonate content	1.00 1.00 1.00 1.00
EcrAN: Edselton, drained----	70	Very limited: Ponding Depth to saturated zone Subsidence Frost action	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Cutbanks cave Content of organic matter	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Carbonate content	1.00 1.00 1.00
EcrAU: Edselton, undrained-	70	Very limited: Ponding Depth to saturated zone Subsidence Frost action	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Cutbanks cave Content of organic matter	1.00 1.00 1.00	Very limited: Ponding Content of organic matter Depth to saturated zone Carbonate content	1.00 1.00 1.00 1.00
EmeA: Elston-----	85	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
GczA: Gilford-----	75	Very limited: Depth to saturated zone Frost action Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Cutbanks cave Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
GdnA: Gilford-----	75	Very limited: Depth to saturated zone Frost action Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Cutbanks cave Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HfbAN: Henrietta, drained--	80	Very limited: Depth to saturated zone Frost action Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Cutbanks cave Ponding	1.00 1.00 1.00	Very limited: Content of organic matter Depth to saturated zone Ponding	1.00 1.00 1.00
HfbAU: Henrietta, undrained	75	Very limited: Ponding Depth to saturated zone Subsidence Frost action	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 1.00	Very limited: Ponding Content of organic matter Depth to saturated zone	1.00 1.00 1.00
HkkA: Hillsdale-----	80	Somewhat limited: Frost action	0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	
HkkB: Hillsdale-----	80	Somewhat limited: Frost action	0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	
HknC2: Hillsdale-----	55	Somewhat limited: Frost action	0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	
Oshtemo-----	30	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
HknD2: Hillsdale-----	55	Somewhat limited: Slope Frost action	0.96 0.50	Somewhat limited: Slope Cutbanks cave	0.96 0.10	Somewhat limited: Slope	0.96
Oshtemo-----	30	Somewhat limited: Slope Frost action	0.96 0.50	Very limited: Cutbanks cave Slope	1.00 0.96	Somewhat limited: Slope	0.96
HkpC2: Hillsdale-----	55	Somewhat limited: Frost action	0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	
Tracy-----	30	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
HkpD2: Hillsdale-----	55	Somewhat limited: Slope Frost action	0.96 0.50	Somewhat limited: Slope Cutbanks cave	0.96 0.10	Somewhat limited: Slope	0.96
Tracy-----	30	Somewhat limited: Slope Frost action	0.96 0.50	Very limited: Cutbanks cave Slope	1.00 0.96	Somewhat limited: Slope	0.96

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HtbAN: Houghton, drained---	75	Very limited: Ponding Depth to saturated zone Subsidence Frost action	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter Cutbanks cave	1.00 1.00 1.00 0.10	Very limited: Ponding Depth to saturated zone	1.00 1.00
HtbAU: Houghton, undrained-	75	Very limited: Ponding Depth to saturated zone Subsidence Frost action	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter Cutbanks cave	1.00 1.00 1.00 0.10	Very limited: Ponding Content of organic matter Depth to saturated zone	1.00 1.00 1.00
JaaAK: Jamestown-----	80	Very limited: Depth to saturated zone Frost action Flooding Low strength	1.00 1.00 1.00 1.00	Very limited: Depth to saturated zone Cutbanks cave Flooding Depth to dense layer	1.00 1.00 0.60 0.50	Very limited: Depth to saturated zone Flooding	1.00 0.60
MfaA: Martinsville-----	70	Somewhat limited: Low strength Shrink-swell Frost action	0.78 0.50 0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	
MfaB2: Martinsville-----	70	Somewhat limited: Low strength Shrink-swell Frost action	0.78 0.50 0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	
MfaC2: Martinsville-----	80	Somewhat limited: Low strength Shrink-swell Frost action	0.78 0.50 0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	
MfrAN: Madaus, drained----	80	Very limited: Ponding Depth to saturated zone Frost action	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Carbonate content Droughty	1.00 1.00 1.00 0.06
MfrAU: Madaus, undrained---	75	Very limited: Ponding Depth to saturated zone Frost action	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Carbonate content Droughty	1.00 1.00 1.00 0.06

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MgcA: Maumee-----	80	Very limited: Depth to saturated zone Ponding Frost action	 1.00 1.00 0.50	Very limited: Depth to saturated zone Cutbanks cave Ponding	 1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding Droughty	 1.00 1.00 0.01
MgdAN: Martisco, drained---	75	Very limited: Ponding Depth to saturated zone Subsidence Frost action	 1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Cutbanks cave	 1.00 1.00 0.10	Very limited: Ponding Content of organic matter Depth to saturated zone Carbonate content	 1.00 1.00 1.00
MhaA: Maumee-----	80	Very limited: Depth to saturated zone Ponding Frost action	 1.00 1.00 0.50	Very limited: Depth to saturated zone Cutbanks cave Ponding	 1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding Droughty	 1.00 1.00 0.01
MhbA: Maumee-----	90	Very limited: Ponding Depth to saturated zone Frost action	 1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone Cutbanks cave	 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Droughty	 1.00 1.00 0.01
MmbC2: Miami-----	80	Very limited: Low strength Shrink-swell Frost action	 1.00 0.50 0.50	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	 1.00 0.50 0.10	Not limited	
MmdC3: Miami-----	80	Very limited: Low strength Shrink-swell Frost action	 1.00 0.50 0.50	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	 1.00 0.50 0.10	Not limited	
MmdD3: Miami-----	80	Very limited: Low strength Slope Shrink-swell Frost action	 1.00 0.96 0.50 0.50	Very limited: Depth to saturated zone Slope Depth to dense layer Cutbanks cave	 1.00 0.96 0.50 0.10	Somewhat limited: Slope	 0.96

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MouA: Milford-----	85	Very limited: Depth to saturated zone Frost action Low strength Ponding Shrink-swell	1.00 1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Cutbanks cave	1.00 1.00 0.10	Very limited: Depth to saturated zone Ponding	1.00 1.00
MsaA: Mishawaka-----	95	Not limited		Very limited: Cutbanks cave	1.00	Not limited	
MtsB2: Morley-----	75	Very limited: Frost action Low strength Shrink-swell Depth to saturated zone	1.00 1.00 1.00 0.19	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	1.00 0.50 0.10	Very limited: Carbonate content Depth to saturated zone Droughty	1.00 0.19 0.01
MtsC2: Morley-----	80	Very limited: Frost action Low strength Shrink-swell Depth to saturated zone Slope	1.00 1.00 1.00 0.19 0.04	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave Slope	1.00 0.50 0.10 0.04	Very limited: Carbonate content Depth to saturated zone Slope Droughty	1.00 0.19 0.04 0.01
MubD3: Morley-----	80	Very limited: Frost action Low strength Shrink-swell Slope Depth to saturated zone	1.00 1.00 1.00 1.00 0.19	Very limited: Depth to saturated zone Slope Depth to dense layer Cutbanks cave	1.00 1.00 0.50 0.10	Very limited: Slope Carbonate content Depth to saturated zone Droughty	1.00 1.00 0.19 0.10
MvhAN: Moston, drained----	80	Very limited: Ponding Depth to saturated zone Subsidence Frost action Low strength	1.00 1.00 1.00 1.00 0.78	Very limited: Ponding Depth to saturated zone Cutbanks cave Content of organic matter	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
MvhAU: Moston, undrained---	75	Very limited: Ponding Depth to saturated zone Subsidence Frost action Low strength	1.00 1.00 1.00 1.00 0.78	Very limited: Ponding Depth to saturated zone Cutbanks cave Content of organic matter	1.00 1.00 1.00	Very limited: Ponding Content of organic matter Depth to saturated zone	1.00 1.00 1.00

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MvkA:							
Morocco-----	85	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Frost action	0.50	Cutbanks cave	1.00	Droughty	0.15
MwzAN:							
Muskego, drained----	75	Very limited:		Very limited:		Very limited:	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Subsidence	1.00	Content of	1.00		
		Frost action	1.00	organic matter			
				Cutbanks cave	0.10		
MwzAU:							
Muskego, undrained--	70	Very limited:		Very limited:		Very limited:	
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Depth to	1.00	Depth to	1.00	Content of	1.00
		saturated zone		saturated zone		organic matter	
		Subsidence	1.00	Content of	1.00	Depth to	1.00
		Frost action	1.00	organic matter		saturated zone	
				Cutbanks cave	0.10		
OkrA:							
Oshtemo-----	80	Somewhat limited:		Very limited:		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		
OkrB:							
Oshtemo-----	80	Somewhat limited:		Very limited:		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		
OkrC2:							
Oshtemo-----	80	Somewhat limited:		Very limited:		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		
OkrD:							
Oshtemo-----	80	Somewhat limited:		Very limited:		Somewhat limited:	
		Slope	0.96	Cutbanks cave	1.00	Slope	0.96
		Frost action	0.50	Slope	0.96		
OlcA:							
Oshtemo-----	80	Somewhat limited:		Very limited:		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		
OlcB:							
Oshtemo-----	80	Somewhat limited:		Very limited:		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		
OlcC2:							
Oshtemo-----	80	Somewhat limited:		Very limited:		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		
OlcD:							
Oshtemo-----	80	Somewhat limited:		Very limited:		Somewhat limited:	
		Slope	0.96	Cutbanks cave	1.00	Slope	0.96
		Frost action	0.50	Slope	0.96		

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OmgA: Osolo-----	85	Not limited		Very limited: Cutbanks cave Depth to saturated zone	1.00 0.24	Somewhat limited: Droughty	0.07
PaaAN: Palms, drained-----	80	Very limited: Depth to saturated zone Subsidence Frost action Ponding	1.00 1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding Content of organic matter Cutbanks cave	1.00 1.00 1.00 1.00 0.10	Very limited: Content of organic matter Depth to saturated zone Ponding	1.00 1.00 1.00
PaaAU: Palms, undrained----	75	Very limited: Ponding Depth to saturated zone Subsidence Frost action	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter Cutbanks cave	1.00 1.00 1.00 1.00 0.10	Very limited: Ponding Content of organic matter Depth to saturated zone	1.00 1.00 1.00
Pmg: Pits, gravel-----	100	Not rated		Not rated		Not rated	
Px1A: Psammaquents-----	85	Not rated		Not rated		Not rated	
Pxo: Psammments-----	85	Not rated		Not rated		Not rated	
QuiA: Quinn-----	80	Very limited: Depth to saturated zone Frost action	1.00 1.00	Very limited: Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited: Depth to saturated zone	1.00
QujA: Quinn-----	75	Very limited: Depth to saturated zone Frost action	1.00 1.00	Very limited: Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited: Depth to saturated zone	1.00
RenA: Rensselaer-----	85	Very limited: Ponding Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00



Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ReyA: Rensselaer-----	75	Very limited: Ponding Depth to saturated zone Frost action Low strength Shrink-swell	 1.00 1.00  1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone Cutbanks cave	 1.00 1.00  1.00	Very limited: Ponding Depth to saturated zone	 1.00 1.00  
RopA: Riddles-----	50	Somewhat limited: Low strength Frost action	 0.78 0.50	Very limited: Cutbanks cave	 1.00	Not limited	
Oshtemo-----	35	Somewhat limited: Frost action	 0.50	Very limited: Cutbanks cave	 1.00	Not limited	
RopB: Riddles-----	50	Somewhat limited: Low strength Frost action	 0.78 0.50	Very limited: Cutbanks cave	 1.00	Not limited	
Oshtemo-----	35	Somewhat limited: Frost action	 0.50	Very limited: Cutbanks cave	 1.00	Not limited	
RopC2: Riddles-----	50	Somewhat limited: Low strength Frost action	 0.78 0.50	Very limited: Cutbanks cave	 1.00	Not limited	
Oshtemo-----	35	Somewhat limited: Frost action	 0.50	Very limited: Cutbanks cave	 1.00	Not limited	
RopD2: Riddles-----	50	Somewhat limited: Slope Low strength Frost action	 0.96 0.78 0.50	Very limited: Cutbanks cave Slope	 1.00 0.96	Somewhat limited: Slope	 0.96
Oshtemo-----	35	Somewhat limited: Slope Frost action	 0.96 0.50	Very limited: Cutbanks cave Slope	 1.00 0.96	Somewhat limited: Slope	 0.96
RoqB: Riddles-----	55	Somewhat limited: Low strength Frost action	 0.78 0.50	Very limited: Cutbanks cave	 1.00	Not limited	
Metea-----	30	Somewhat limited: Frost action	 0.50	Very limited: Cutbanks cave	 1.00	Not limited	
RoqC2: Riddles-----	55	Somewhat limited: Low strength Frost action	 0.78 0.50	Very limited: Cutbanks cave	 1.00	Not limited	
Metea-----	30	Somewhat limited: Frost action	 0.50	Very limited: Cutbanks cave	 1.00	Not limited	

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RoqD2: Riddles-----	50	Somewhat limited: Slope Low strength Frost action	 0.96 0.78 0.50	Very limited: Cutbanks cave Slope	 1.00 0.96	Somewhat limited: Slope	 0.96
Metea-----	30	Somewhat limited: Slope Frost action	 0.96 0.50	Very limited: Cutbanks cave Slope	 1.00 0.96	Somewhat limited: Slope	 0.96
SdzA: Selfridge-----	50	Very limited: Frost action Depth to saturated zone	 1.00 0.75	Very limited: Depth to saturated zone Cutbanks cave	 1.00 1.00	Somewhat limited: Depth to saturated zone	 0.75
Crosier-----	35	Very limited: Depth to saturated zone Frost action Low strength Shrink-swell	 1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	 1.00 0.50 0.10	Very limited: Depth to saturated zone	 1.00
SdzaB: Selfridge-----	50	Very limited: Frost action Depth to saturated zone	 1.00 0.75	Very limited: Depth to saturated zone Cutbanks cave	 1.00 1.00	Somewhat limited: Depth to saturated zone	 0.75
Brems-----	35	Not limited		Very limited: Cutbanks cave Depth to saturated zone	 1.00 1.00	Somewhat limited: Droughty	 0.01
SesA: Schoolcraft-----	80	Somewhat limited: Shrink-swell Frost action	 0.50 0.50	Very limited: Cutbanks cave	 1.00	Not limited	
Sn1A: Southwest-----	75	Very limited: Depth to saturated zone Frost action Ponding Low strength Shrink-swell	 1.00 1.00 1.00 0.78 0.06	Very limited: Depth to saturated zone Ponding Cutbanks cave	 1.00 1.00 0.10	Very limited: Depth to saturated zone Ponding	 1.00 1.00
TmpA: Tracy-----	80	Somewhat limited: Frost action	 0.50	Very limited: Cutbanks cave	 1.00	Not limited	
TmpB: Tracy-----	80	Somewhat limited: Frost action	 0.50	Very limited: Cutbanks cave	 1.00	Not limited	
TmpC2: Tracy-----	80	Somewhat limited: Frost action	 0.50	Very limited: Cutbanks cave	 1.00	Not limited	

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TmpD: Tracy-----	80	Somewhat limited: Slope Frost action	0.96 0.50	Very limited: Cutbanks cave Slope	1.00 0.96	Somewhat limited: Slope	0.96
TnwA: Troxel-----	80	Very limited: Frost action Low strength	1.00 0.78	Somewhat limited: Cutbanks cave	0.10	Not limited	
TxuA: Tyner-----	85	Not limited		Very limited: Cutbanks cave	1.00	Somewhat limited: Droughty	0.12
TxuB: Tyner-----	85	Not limited		Very limited: Cutbanks cave	1.00	Somewhat limited: Droughty	0.12
TxuC: Tyner-----	85	Not limited		Very limited: Cutbanks cave	1.00	Somewhat limited: Droughty	0.12
TxuD: Tyner-----	85	Somewhat limited: Slope	0.96	Very limited: Cutbanks cave Slope	1.00 0.96	Somewhat limited: Slope Droughty	0.96 0.12
TxuF: Tyner-----	80	Very limited: Slope	1.00	Very limited: Slope Cutbanks cave	1.00 1.00	Very limited: Slope Droughty	1.00 0.12
Uam: Udorthents, loamy---	100	Not rated		Not rated		Not rated	
UdeA: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
UdeB: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
UdeC: Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
UdkA: Urban land-----	50	Not rated		Not rated		Not rated	
Brady-----	40	Very limited: Depth to saturated zone Frost action	1.00 1.00	Very limited: Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited: Depth to saturated zone	1.00

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UdzA: Urban land-----	50	Not rated		Not rated		Not rated	
Auten-----	40	Very limited: Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited: Depth to saturated zone	1.00
UeaA: Urban land-----	50	Not rated		Not rated		Not rated	
Crosier-----	40	Very limited: Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	1.00 0.50 0.10	Very limited: Depth to saturated zone	1.00
UeqA: Urban land-----	50	Not rated		Not rated		Not rated	
Gilford-----	40	Very limited: Depth to saturated zone Frost action Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Cutbanks cave Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
UewA: Urban land-----	50	Not rated		Not rated		Not rated	
Brems-----	25	Not limited		Very limited: Cutbanks cave Depth to saturated zone	1.00 1.00	Somewhat limited: Droughty	0.01
Morocco-----	15	Very limited: Depth to saturated zone Frost action	1.00 0.50	Very limited: Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited: Depth to saturated zone Droughty	1.00 0.15
UfbA: Urban land-----	50	Not rated		Not rated		Not rated	
Brookston-----	40	Very limited: Ponding Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 0.10	Very limited: Ponding Depth to saturated zone	1.00 1.00
UfhA: Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Not limited		Very limited: Cutbanks cave	1.00	Somewhat limited: Too sandy Droughty	0.50 0.22

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UfhB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Not limited		Very limited: Cutbanks cave	1.00	Somewhat limited: Too sandy Droughty	0.50 0.22
UfhC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Not limited		Very limited: Cutbanks cave	1.00	Somewhat limited: Too sandy Droughty	0.50 0.22
UfmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coupee-----	40	Very limited: Low strength Shrink-swell Frost action	1.00 0.50 0.50	Very limited: Cutbanks cave	1.00	Not limited	
UfrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Del Rey-----	40	Very limited: Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Cutbanks cave	1.00 0.10	Very limited: Depth to saturated zone	1.00
UftA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Elston-----	40	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
UfzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Mishawaka-----	45	Not limited		Very limited: Cutbanks cave	1.00	Not limited	
UgaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Morocco-----	40	Very limited: Depth to saturated zone Frost action	1.00 0.50	Very limited: Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited: Depth to saturated zone Droughty	1.00 0.15
UglA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Osolo-----	40	Not limited		Very limited: Cutbanks cave Depth to saturated zone	1.00 0.24	Somewhat limited: Droughty	0.07

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UgrA: Urban land-----	50	Not rated		Not rated		Not rated	
Rensselaer-----	40	Very limited: Ponding Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone Cutbanks cave	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
UgsA: Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Somewhat limited: Low strength Frost action	0.78 0.50	Very limited: Cutbanks cave	1.00	Not limited	
Oshtemo-----	15	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
UgsB: Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Somewhat limited: Low strength Frost action	0.78 0.50	Very limited: Cutbanks cave	1.00	Not limited	
Oshtemo-----	15	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
UgvA: Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Not limited		Very limited: Cutbanks cave	1.00	Somewhat limited: Droughty	0.12
UgvB: Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Not limited		Very limited: Cutbanks cave	1.00	Somewhat limited: Droughty	0.12
UgvC: Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Not limited		Very limited: Cutbanks cave	1.00	Somewhat limited: Droughty	0.12
UgvD: Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Somewhat limited: Slope	0.96	Very limited: Cutbanks cave Slope	1.00 0.96	Somewhat limited: Slope Droughty	0.96 0.12
UhmA: Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Somewhat limited: Frost action	0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UhmB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Somewhat limited: Frost action	0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	
UhoC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Somewhat limited: Frost action	0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	
Oshtemo-----	15	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
UhoD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Somewhat limited: Slope Frost action	0.96 0.50	Somewhat limited: Slope Cutbanks cave	0.96 0.10	Somewhat limited: Slope	0.96
Oshtemo-----	15	Somewhat limited: Slope Frost action	0.96 0.50	Very limited: Cutbanks cave Slope	1.00 0.96	Somewhat limited: Slope	0.96
UhpC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Somewhat limited: Frost action	0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	
Tracy-----	15	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
UhpD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Somewhat limited: Slope Frost action	0.96 0.50	Somewhat limited: Slope Cutbanks cave	0.96 0.10	Somewhat limited: Slope	0.96
Tracy-----	15	Somewhat limited: Slope Frost action	0.96 0.50	Very limited: Cutbanks cave Slope	1.00 0.96	Somewhat limited: Slope	0.96
UhwA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Somewhat limited: Low strength Shrink-swell Frost action	0.78 0.50 0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	
UhwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Somewhat limited: Low strength Shrink-swell Frost action	0.78 0.50 0.50	Somewhat limited: Cutbanks cave	0.10	Not limited	



Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UhwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Somewhat limited:		Somewhat limited:		Not limited	
		Low strength	0.78	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Frost action	0.50				
UkaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Maumee-----	40	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Ponding	1.00	Cutbanks cave	1.00	Ponding	1.00
		Frost action	0.50	Ponding	1.00	Droughty	0.01
UkeA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Milford-----	40	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Frost action	1.00	Ponding	1.00	Ponding	1.00
		Low strength	1.00	Cutbanks cave	0.10		
		Ponding	1.00				
		Shrink-swell	0.50				
Ukx A:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Somewhat limited:		Very limited:		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		
Ukx B:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Somewhat limited:		Very limited:		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		
Ukx C:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Somewhat limited:		Very limited:		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		
UmfB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Somewhat limited:		Very limited:		Not limited	
		Low strength	0.78	Cutbanks cave	1.00		
		Frost action	0.50				
Metea-----	15	Somewhat limited:		Very limited:		Not limited	
		Frost action	0.50	Cutbanks cave	1.00		

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UmfC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Somewhat limited: Low strength Frost action	0.78 0.50	Very limited: Cutbanks cave	1.00	Not limited	
Metea-----	15	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
UmfD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Somewhat limited: Slope Low strength Frost action	0.96 0.78 0.50	Very limited: Cutbanks cave Slope	1.00 0.96	Somewhat limited: Slope	0.96
Metea-----	15	Somewhat limited: Slope Frost action	0.96 0.50	Very limited: Cutbanks cave Slope	1.00 0.96	Somewhat limited: Slope	0.96
UmpA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Schoolcraft-----	40	Somewhat limited: Shrink-swell Frost action	0.50 0.50	Very limited: Cutbanks cave	1.00	Not limited	
UmuA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Southwest-----	40	Very limited: Depth to saturated zone Frost action Ponding Low strength Shrink-swell	1.00 1.00 1.00 0.78 0.06	Very limited: Depth to saturated zone Ponding Cutbanks cave	1.00 1.00 0.10	Very limited: Depth to saturated zone Ponding	1.00 1.00
UmwA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
UmwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	
UmwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Somewhat limited: Frost action	0.50	Very limited: Cutbanks cave	1.00	Not limited	

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UmwD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Somewhat limited: Slope	0.96	Very limited: Cutbanks cave	1.00	Somewhat limited: Slope	0.96
		Frost action	0.50	Slope	0.96		
UmxA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Troxel-----	40	Very limited: Frost action	1.00	Somewhat limited: Cutbanks cave	0.10	Not limited	
		Low strength	0.78				
UnoA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Whitaker-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Frost action	1.00	Cutbanks cave	1.00		
		Low strength	0.78				
		Shrink-swell	0.50				
UnqB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Williamstown-----	25	Very limited: Low strength	1.00	Very limited: Depth to saturated zone	1.00	Somewhat limited: Depth to saturated zone	0.19
		Shrink-swell	0.50	Depth to dense	0.50		
		Frost action	0.50	layer			
		Depth to saturated zone	0.19	Cutbanks cave	0.10		
Crosier-----	15	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Frost action	1.00	Depth to dense	0.50		
		Low strength	1.00	layer			
		Shrink-swell	0.50	Cutbanks cave	0.10		
UntA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Wunabuna, drained---	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Frost action	1.00	Ponding	1.00	Ponding	1.00
		Low strength	1.00	Content of	1.00		
		Ponding	1.00	organic matter			
		Shrink-swell	0.50	Too clayey	0.18		
				Cutbanks cave	0.10		
Usl:							
Udorthents, rubbish-	100	Not rated		Not rated		Not rated	
W:							
Water-----	100	Not rated		Not rated		Not rated	

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WcnAI: Waterford-----	80	Very limited: Depth to saturated zone Frost action Flooding	1.00 1.00 1.00	Very limited: Depth to saturated zone Cutbanks cave Flooding	1.00 1.00 0.80	Very limited: Flooding Depth to saturated zone	1.00 1.00
WoaA: Williamstown-----	85	Very limited: Low strength Shrink-swell Frost action Depth to saturated zone	1.00 0.50 0.50 0.19	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	1.00 0.50 0.10	Somewhat limited: Depth to saturated zone	0.19
WoaB2: Williamstown-----	85	Very limited: Low strength Shrink-swell Frost action Depth to saturated zone	1.00 0.50 0.50 0.19	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	1.00 0.50 0.10	Somewhat limited: Depth to saturated zone	0.19
WoaC2: Williamstown-----	80	Very limited: Low strength Shrink-swell Frost action Depth to saturated zone	1.00 0.50 0.50 0.19	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	1.00 0.50 0.10	Somewhat limited: Depth to saturated zone	0.19
WobB: Williamstown-----	50	Very limited: Low strength Shrink-swell Frost action Depth to saturated zone	1.00 0.50 0.50 0.19	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	1.00 0.50 0.10	Somewhat limited: Depth to saturated zone	0.19
Crosier-----	30	Very limited: Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	1.00 0.50 0.10	Very limited: Depth to saturated zone	1.00
WrxAN: Wunabuna, drained---	85	Very limited: Depth to saturated zone Frost action Low strength Ponding Shrink-swell	1.00 1.00 1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Content of organic matter Too clayey Cutbanks cave	1.00 1.00 1.00 0.18 0.10	Very limited: Depth to saturated zone Ponding	1.00 1.00

Table 13b.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WtbA: Whitaker-----	75	Very limited: Depth to saturated zone Frost action Low strength Shrink-swell	1.00 1.00 0.78 0.50	Very limited: Depth to saturated zone Cutbanks cave	1.00 1.00	Very limited: Depth to saturated zone	1.00
WujB: Williamstown-----	45	Very limited: Low strength Shrink-swell Frost action Depth to saturated zone	1.00 0.50 0.50 0.19	Very limited: Depth to saturated zone Depth to dense layer Cutbanks cave	1.00 0.50 0.10	Somewhat limited: Depth to saturated zone	0.19
Moon-----	40	Somewhat limited: Frost action Depth to saturated zone	0.50 0.03	Very limited: Depth to saturated zone Cutbanks cave	1.00 1.00	Somewhat limited: Depth to saturated zone	0.03

Table 14a.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AahAK: Abscota-----	80	Very limited: Flooding Depth to saturated zone Filtering capacity	1.00 1.00 1.00	Very limited: Flooding Seepage Depth to saturated zone	1.00 1.00 1.00
AatAN: Ackerman, drained---	85	Very limited: Ponding Depth to saturated zone Filtering capacity	1.00 1.00 1.00	Very limited: Ponding Seepage Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00
AbhAN: Adrian, drained----	75	Very limited: Ponding Depth to saturated zone Filtering capacity Subsidence	1.00 1.00 1.00 1.00	Very limited: Ponding Seepage Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00
AbhAU: Adrian, undrained---	75	Very limited: Ponding Depth to saturated zone Filtering capacity Subsidence	1.00 1.00 1.00 1.00	Very limited: Ponding Seepage Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00
ApuAN: Antung, drained----	75	Very limited: Ponding Depth to saturated zone Filtering capacity	1.00 1.00 1.00	Very limited: Ponding Seepage Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00
AxvA: Auten-----	82	Very limited: Depth to saturated zone Filtering capacity	1.00 1.00	Very limited: Seepage Depth to saturated zone	1.00 1.00

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields	Sewage lagoons		
		Rating class and limiting features	Value	Rating class and limiting features	Value
BaaA: Bainter-----	85	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Very limited: Seepage	1.00
BaaB: Bainter-----	85	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Very limited: Seepage Slope	1.00 0.08
BaaC2: Bainter-----	85	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Very limited: Seepage Slope	1.00 1.00
BbmA: Baugo-----	85	Very limited: Depth to saturated zone Filtering capacity Restricted permeability	1.00 1.00 0.46	Very limited: Seepage Depth to saturated zone	1.00 0.01
BmgA: Blount-----	85	Very limited: Restricted permeability Depth to saturated zone	1.00 1.00	Somewhat limited: Depth to saturated zone	0.01
BshA: Brady-----	90	Very limited: Depth to saturated zone Filtering capacity	1.00 1.00	Very limited: Seepage Depth to saturated zone	1.00 1.00
BsxA: Brems-----	50	Very limited: Depth to saturated zone Filtering capacity	1.00 1.00	Very limited: Seepage Depth to saturated zone	1.00 1.00
Morocco-----	40	Very limited: Depth to saturated zone Filtering capacity	1.00 1.00	Very limited: Seepage Depth to saturated zone	1.00 1.00



Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
BteA: Brems-----	80	Very limited: Depth to saturated zone Filtering capacity	1.00 1.00	Very limited: Seepage Depth to saturated zone	1.00 1.00
BuuA: Brookston-----	80	Very limited: Ponding Depth to saturated zone Restricted permeability	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00 1.00 0.53
CmbAI: Cohoctah-----	75	Very limited: Flooding Depth to saturated zone Filtering capacity	1.00 1.00 1.00	Very limited: Flooding Seepage Depth to saturated zone	1.00 1.00 1.00
CnbA: Coloma-----	85	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
CnbB: Coloma-----	85	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 0.32
CnbC: Coloma-----	85	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 1.00
CnbD: Coloma-----	85	Very limited: Filtering capacity Slope	1.00 0.96	Very limited: Slope Seepage	1.00 1.00
CrrA: Coupee-----	85	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Very limited: Seepage	1.00
CvdA: Crosier-----	85	Very limited: Depth to saturated zone Restricted permeability	1.00 1.00	Somewhat limited: Depth to saturated zone	0.01

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
CvdB: Crosier-----	80	Very limited: Depth to saturated zone Restricted permeability	1.00  1.00	Somewhat limited: Slope Depth to saturated zone	0.08  0.01
CwkA: Crumstown-----	80	Very limited: Filtering capacity Depth to saturated zone	1.00  0.65	Very limited: Seepage Depth to saturated zone	1.00  0.02
CwkB: Crumstown-----	80	Very limited: Filtering capacity Depth to saturated zone	1.00  0.65	Very limited: Seepage Slope Depth to saturated zone	1.00  0.08 0.02
DcrA: Del Rey-----	85	Very limited: Restricted permeability Depth to saturated zone	1.00  1.00	Somewhat limited: Depth to saturated zone	0.01
EchAN: Edwards, drained----	80	Very limited: Restricted permeability Ponding Depth to saturated zone	1.00  1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage Content of organic matter	1.00  1.00 1.00 1.00
EchAU: Edwards, undrained--	75	Very limited: Restricted permeability Ponding Depth to saturated zone	1.00  1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter	1.00  1.00 1.00
EcrAN: Edselton, drained---	70	Very limited: Restricted permeability Ponding Depth to saturated zone Filtering capacity	1.00  1.00 1.00 1.00	Very limited: Ponding Seepage Depth to saturated zone Content of organic matter	1.00  1.00 1.00 1.00

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
EcrAU: Edselton, undrained-	70	Very limited: Restricted permeability Ponding Depth to saturated zone Filtering capacity	1.00 1.00 1.00 1.00	Very limited: Ponding Seepage Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00
EmeA: Elston-----	85	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
GczA: Gilford-----	75	Very limited: Depth to saturated zone Filtering capacity Ponding	1.00 1.00 1.00	Very limited: Seepage Depth to saturated zone Ponding	1.00 1.00 1.00
GdnA: Gilford-----	75	Very limited: Depth to saturated zone Filtering capacity Ponding	1.00 1.00 1.00	Very limited: Seepage Depth to saturated zone Ponding	1.00 1.00 1.00
HfbAN: Henrietta, drained--	80	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding Content of organic matter Seepage	1.00 1.00 1.00 0.50
HfbAU: Henrietta, undrained	75	Very limited: Ponding Depth to saturated zone Subsidence Restricted permeability	1.00 1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone Content of organic matter Seepage	1.00 1.00 1.00 0.50
HkkA: Hillsdale-----	80	Somewhat limited: Restricted permeability	0.46	Very limited: Seepage	1.00
HkkB: Hillsdale-----	80	Somewhat limited: Restricted permeability	0.46	Very limited: Seepage Slope	1.00 0.08

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
HknC2:					
Hillsdale-----	55	Somewhat limited:		Very limited:	
		Restricted	0.46	Seepage	1.00
		permeability		Slope	1.00
Oshtemo-----	30	Very limited:		Very limited:	
		Filtering	1.00	Seepage	1.00
		capacity		Slope	1.00
HknD2:					
Hillsdale-----	55	Somewhat limited:		Very limited:	
		Slope	0.96	Slope	1.00
		Restricted	0.46	Seepage	1.00
		permeability			
Oshtemo-----	30	Very limited:		Very limited:	
		Filtering	1.00	Slope	1.00
		capacity		Seepage	1.00
		Slope	0.96		
HkpC2:					
Hillsdale-----	55	Somewhat limited:		Very limited:	
		Restricted	0.46	Seepage	1.00
		permeability		Slope	1.00
Tracy-----	30	Very limited:		Very limited:	
		Filtering	1.00	Slope	1.00
		capacity		Seepage	0.53
		Restricted	0.46		
		permeability			
HkpD2:					
Hillsdale-----	55	Somewhat limited:		Very limited:	
		Slope	0.96	Slope	1.00
		Restricted	0.46	Seepage	1.00
		permeability			
Tracy-----	30	Very limited:		Very limited:	
		Filtering	1.00	Slope	1.00
		capacity		Seepage	0.53
		Slope	0.96		
		Restricted	0.46		
		permeability			
HtbAN:					
Houghton, drained---	75	Very limited:		Very limited:	
		Ponding	1.00	Ponding	1.00
		Depth to	1.00	Content of	1.00
		saturated zone		organic matter	
		Subsidence	1.00	Depth to	1.00
				saturated zone	
				Seepage	1.00
HtbAU:					
Houghton, undrained-	75	Very limited:		Very limited:	
		Ponding	1.00	Ponding	1.00
		Depth to	1.00	Content of	1.00
		saturated zone		organic matter	
		Subsidence	1.00	Depth to	1.00
				saturated zone	

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
JaaAK: Jamestown-----	80	Very limited: Flooding Depth to saturated zone Filtering capacity Restricted permeability	1.00 1.00 1.00 0.46	Very limited: Flooding Seepage	1.00 1.00
MfaA: Martinsville-----	70	Somewhat limited: Restricted permeability	0.46	Somewhat limited: Seepage	0.53
MfaB2: Martinsville-----	70	Somewhat limited: Restricted permeability	0.46	Somewhat limited: Seepage Slope	0.53 0.08
MfaC2: Martinsville-----	80	Somewhat limited: Restricted permeability	0.46	Very limited: Slope Seepage	1.00 0.53
MfrAN: Madaus, drained----	80	Very limited: Restricted permeability Ponding Depth to saturated zone Filtering capacity	1.00 1.00 1.00 1.00	Very limited: Ponding Seepage Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00
MfrAU: Madaus, undrained---	75	Very limited: Restricted permeability Ponding Depth to saturated zone Filtering capacity	1.00 1.00 1.00 1.00	Very limited: Ponding Seepage Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00
MgcA: Maumee-----	80	Very limited: Depth to saturated zone Filtering capacity Ponding	1.00 1.00 1.00	Very limited: Seepage Depth to saturated zone Ponding	1.00 1.00 1.00
MgdAN: Martisco, drained---	75	Very limited: Restricted permeability Ponding Depth to saturated zone	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter	1.00 1.00 1.00

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
MhaA: Maumee-----	80	Very limited: Depth to saturated zone Filtering capacity Ponding	1.00 1.00 1.00	Very limited: Seepage Depth to saturated zone Ponding	1.00 1.00 1.00
MhbA: Maumee-----	90	Very limited: Ponding Depth to saturated zone Filtering capacity	1.00 1.00 1.00	Very limited: Ponding Seepage Depth to saturated zone	1.00 1.00 1.00
MmbC2: Miami-----	80	Very limited: Depth to saturated zone Restricted permeability	1.00 1.00	Very limited: Slope Depth to saturated zone Seepage	1.00 0.81 0.53
MmdC3: Miami-----	80	Very limited: Depth to saturated zone Restricted permeability	1.00 1.00	Very limited: Slope Depth to saturated zone Seepage	1.00 0.81 0.53
MmdD3: Miami-----	80	Very limited: Depth to saturated zone Restricted permeability Slope	1.00 1.00 0.96	Very limited: Slope Depth to saturated zone Seepage	1.00 0.81 0.53
MouA: Milford-----	85	Very limited: Depth to saturated zone Restricted permeability Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
MsaA: Mishawaka-----	95	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
MtsB2: Morley-----	75	Very limited: Depth to saturated zone Restricted permeability	1.00 1.00	Somewhat limited: Slope Depth to saturated zone	0.32 0.25

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
MtsC2: Morley-----	80	Very limited: Depth to saturated zone Restricted permeability Slope	1.00 1.00 0.04	Very limited: Slope Depth to saturated zone	1.00 0.25
MubD3: Morley-----	80	Very limited: Depth to saturated zone Restricted permeability Slope	1.00 1.00 1.00	Very limited: Slope Depth to saturated zone	1.00 0.25
MvhAN: Moston, drained----	80	Very limited: Restricted permeability Ponding Depth to saturated zone Filtering capacity	1.00 1.00 1.00 1.00 1.00	Very limited: Ponding Seepage Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00
MvhAU: Moston, undrained---	75	Very limited: Restricted permeability Ponding Depth to saturated zone Filtering capacity	1.00 1.00 1.00 1.00 1.00	Very limited: Ponding Seepage Depth to saturated zone Content of organic matter	1.00 1.00 1.00 1.00
MvkA: Morocco-----	85	Very limited: Depth to saturated zone Filtering capacity	1.00 1.00	Very limited: Seepage Depth to saturated zone	1.00 1.00
MwzAN: Muskego, drained----	75	Very limited: Restricted permeability Ponding Depth to saturated zone Subsidence	1.00 1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage Content of organic matter	1.00 1.00 1.00 1.00
MwzAU: Muskego, undrained--	70	Very limited: Restricted permeability Ponding Depth to saturated zone Subsidence	1.00 1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter	1.00 1.00 1.00



Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
OkrA: Oshtemo-----	80	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
OkrB: Oshtemo-----	80	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 0.08
OkrC2: Oshtemo-----	80	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 1.00
OkrD: Oshtemo-----	80	Very limited: Filtering capacity Slope	1.00 0.96	Very limited: Slope Seepage	1.00 1.00
OlcA: Oshtemo-----	80	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
OlcB: Oshtemo-----	80	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 0.08
OlcC2: Oshtemo-----	80	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 1.00
OlcD: Oshtemo-----	80	Very limited: Filtering capacity Slope	1.00 0.96	Very limited: Slope Seepage	1.00 1.00
OmgA: Osolo-----	85	Very limited: Filtering capacity Depth to saturated zone	1.00 0.65	Very limited: Seepage Depth to saturated zone	1.00 0.02
PaaAN: Palms, drained-----	80	Very limited: Depth to saturated zone Subsidence Ponding Restricted permeability	1.00 1.00 1.00 0.72	Very limited: Depth to saturated zone Ponding Content of organic matter Seepage	1.00 1.00 1.00 0.28

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
PaaAU: Palms, undrained----	75	Very limited: Ponding Depth to saturated zone Subsidence Restricted permeability	 1.00 1.00  1.00 0.72	Very limited: Ponding Depth to saturated zone Content of organic matter Seepage	 1.00 1.00  1.00 0.28
Pmg: Pits, gravel-----	100	Not rated		Not rated	
Px1A: Psammaquents-----	85	Not rated		Not rated	
Pxo: Psammets-----	85	Not rated		Not rated	
QuiA: Quinn-----	80	Very limited: Depth to saturated zone Filtering capacity Restricted permeability	 1.00 1.00  0.46	Very limited: Seepage	 1.00
QujA: Quinn-----	75	Very limited: Depth to saturated zone Filtering capacity Restricted permeability	 1.00 1.00  0.46	Very limited: Seepage	 1.00
RenA: Rensselaer-----	85	Very limited: Restricted permeability Ponding Depth to saturated zone	 1.00  1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	 1.00  1.00 0.53
ReyA: Rensselaer-----	75	Very limited: Restricted permeability Ponding Depth to saturated zone	 1.00  1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	 1.00  1.00 0.53
RopA: Riddles-----	50	Very limited: Restricted permeability	 1.00	Somewhat limited: Seepage	 0.53
Oshtemo-----	35	Very limited: Filtering capacity	 1.00	Very limited: Seepage	 1.00

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
RopB:					
Riddles-----	50	Very limited: Restricted permeability	1.00	Somewhat limited: Seepage Slope	0.53 0.08
Oshtemo-----	35	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 0.08
RopC2:					
Riddles-----	50	Very limited: Restricted permeability	1.00	Very limited: Slope Seepage	1.00 0.53
Oshtemo-----	35	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 1.00
RopD2:					
Riddles-----	50	Very limited: Restricted permeability Slope	1.00 0.96	Very limited: Slope Seepage	1.00 0.53
Oshtemo-----	35	Very limited: Filtering capacity Slope	1.00 0.96	Very limited: Slope Seepage	1.00 1.00
RoqB:					
Riddles-----	55	Very limited: Restricted permeability	1.00	Somewhat limited: Seepage Slope	0.53 0.08
Metea-----	30	Very limited: Filtering capacity Restricted permeability	1.00 1.00	Very limited: Seepage Slope	1.00 0.08
RoqC2:					
Riddles-----	55	Very limited: Restricted permeability	1.00	Very limited: Slope Seepage	1.00 0.53
Metea-----	30	Very limited: Filtering capacity Restricted permeability	1.00 1.00	Very limited: Seepage Slope	1.00 1.00
RoqD2:					
Riddles-----	50	Very limited: Restricted permeability Slope	1.00 0.96	Very limited: Slope Seepage	1.00 0.53

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
RoqD2: Metea-----	30	Very limited: Filtering capacity Restricted permeability Slope	1.00 1.00 0.96	Very limited: Slope Seepage	1.00 1.00
Sdza: Selfridge-----	50	Very limited: Depth to saturated zone Restricted permeability Filtering capacity	1.00 1.00 1.00	Very limited: Seepage Depth to saturated zone	1.00 0.22
Crosier-----	35	Very limited: Depth to saturated zone Restricted permeability	1.00 1.00	Somewhat limited: Depth to saturated zone	0.01
SdzaB: Selfridge-----	50	Very limited: Depth to saturated zone Restricted permeability Filtering capacity	1.00 1.00 1.00	Very limited: Seepage Depth to saturated zone Slope	1.00 0.22 0.08
Brems-----	35	Very limited: Depth to saturated zone Filtering capacity	1.00 1.00	Very limited: Seepage Depth to saturated zone Slope	1.00 1.00 0.08
SesA: Schoolcraft-----	80	Very limited: Filtering capacity Restricted permeability	1.00 0.50	Very limited: Seepage	1.00
Snla: Southwest-----	75	Very limited: Depth to saturated zone Restricted permeability Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding Seepage	1.00 1.00 0.53
TmpA: Tracy-----	80	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Somewhat limited: Seepage	0.53

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
TmpB: Tracy-----	80	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Somewhat limited: Seepage Slope	0.53 0.08
TmpC2: Tracy-----	80	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Very limited: Slope Seepage	1.00 0.53
TmpD: Tracy-----	80	Very limited: Filtering capacity Slope Restricted permeability	1.00 0.96 0.46	Very limited: Slope Seepage	1.00 0.53
TnwA: Troxel-----	80	Somewhat limited: Restricted permeability	0.46	Somewhat limited: Seepage	0.53
TxuA: Tyner-----	85	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
TxuB: Tyner-----	85	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 0.08
TxuC: Tyner-----	85	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 1.00
TxuD: Tyner-----	85	Very limited: Filtering capacity Slope	1.00 0.96	Very limited: Slope Seepage	1.00 1.00
TxuF: Tyner-----	80	Very limited: Filtering capacity Slope	1.00 1.00	Very limited: Slope Seepage	1.00 1.00
Uam: Udorthents, loamy---	100	Not rated		Not rated	

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
UdeA: Urban land-----	50	Not rated		Not rated	
Bainter-----	40	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Very limited: Seepage	1.00
UdeB: Urban land-----	50	Not rated		Not rated	
Bainter-----	40	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Very limited: Seepage Slope	1.00 0.08
UdeC: Urban land-----	50	Not rated		Not rated	
Bainter-----	40	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Very limited: Seepage Slope	1.00 1.00
UdkA: Urban land-----	50	Not rated		Not rated	
Brady-----	40	Very limited: Depth to saturated zone Filtering capacity	1.00 1.00	Very limited: Seepage Depth to saturated zone	1.00 1.00
UdzA: Urban land-----	50	Not rated		Not rated	
Auten-----	40	Very limited: Depth to saturated zone Filtering capacity	1.00 1.00	Very limited: Seepage Depth to saturated zone	1.00 1.00
UeaA: Urban land-----	50	Not rated		Not rated	
Crosier-----	40	Very limited: Depth to saturated zone Restricted permeability	1.00 1.00	Somewhat limited: Depth to saturated zone	0.01

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
UeqA:					
Urban land-----	50	Not rated		Not rated	
Gilford-----	40	Very limited:		Very limited:	
		Depth to	1.00	Seepage	1.00
		saturated zone		Depth to	1.00
		Filtering	1.00	saturated zone	
		capacity		Ponding	1.00
		Ponding	1.00		
UewA:					
Urban land-----	50	Not rated		Not rated	
Brems-----	25	Very limited:		Very limited:	
		Depth to	1.00	Seepage	1.00
		saturated zone		Depth to	1.00
		Filtering	1.00	saturated zone	
		capacity			
Morocco-----	15	Very limited:		Very limited:	
		Depth to	1.00	Seepage	1.00
		saturated zone		Depth to	1.00
		Filtering	1.00	saturated zone	
		capacity			
UfbA:					
Urban land-----	50	Not rated		Not rated	
Brookston-----	40	Very limited:		Very limited:	
		Ponding	1.00	Ponding	1.00
		Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone	
		Restricted	1.00	Seepage	0.53
		permeability			
UfhA:					
Urban land-----	50	Not rated		Not rated	
Coloma-----	40	Very limited:		Very limited:	
		Filtering	1.00	Seepage	1.00
		capacity			
UfhB:					
Urban land-----	50	Not rated		Not rated	
Coloma-----	40	Very limited:		Very limited:	
		Filtering	1.00	Seepage	1.00
		capacity		Slope	0.32
UfhC:					
Urban land-----	50	Not rated		Not rated	
Coloma-----	40	Very limited:		Very limited:	
		Filtering	1.00	Seepage	1.00
		capacity		Slope	1.00



Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
UfmA:					
Urban land-----	50	Not rated		Not rated	
Coupee-----	40	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
		Restricted permeability	0.46		
UfrA:					
Urban land-----	50	Not rated		Not rated	
Del Rey-----	40	Very limited: Restricted permeability	1.00	Somewhat limited: Depth to saturated zone	0.01
		Depth to saturated zone	1.00		
UftA:					
Urban land-----	50	Not rated		Not rated	
Elston-----	40	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
UfzA:					
Urban land-----	50	Not rated		Not rated	
Mishawaka-----	45	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
UgaA:					
Urban land-----	50	Not rated		Not rated	
Morocco-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
UglA:					
Urban land-----	50	Not rated		Not rated	
Osolo-----	40	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
		Depth to saturated zone	0.65	Depth to saturated zone	0.02
UgrA:					
Urban land-----	50	Not rated		Not rated	
Rensselaer-----	40	Very limited: Restricted permeability	1.00	Very limited: Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Seepage	0.53

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
UgsA:					
Urban land-----	50	Not rated		Not rated	
Riddles-----	25	Very limited: Restricted permeability	1.00	Somewhat limited: Seepage	0.53
Oshtemo-----	15	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
UgsB:					
Urban land-----	50	Not rated		Not rated	
Riddles-----	25	Very limited: Restricted permeability	1.00	Somewhat limited: Seepage Slope	0.53 0.08
Oshtemo-----	15	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 0.08
UgvA:					
Urban land-----	50	Not rated		Not rated	
Tyner-----	40	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
UgvB:					
Urban land-----	50	Not rated		Not rated	
Tyner-----	40	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 1.08
UgvC:					
Urban land-----	50	Not rated		Not rated	
Tyner-----	40	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 1.00
UgvD:					
Urban land-----	50	Not rated		Not rated	
Tyner-----	40	Very limited: Filtering capacity Slope	1.00 0.96	Very limited: Slope Seepage	1.00 1.00
UhmA:					
Urban land-----	50	Not rated		Not rated	
Hillsdale-----	40	Somewhat limited: Restricted permeability	0.46	Very limited: Seepage	1.00

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
UhmB:					
Urban land-----	50	Not rated		Not rated	
Hillsdale-----	40	Somewhat limited: Restricted permeability	0.46	Very limited: Seepage Slope	1.00 0.08
UhoC:					
Urban land-----	50	Not rated		Not rated	
Hillsdale-----	30	Somewhat limited: Restricted permeability	0.46	Very limited: Seepage Slope	1.00 1.00
Oshtemo-----	15	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 1.00
UhoD:					
Urban land-----	50	Not rated		Not rated	
Hillsdale-----	30	Somewhat limited: Slope Restricted permeability	0.96 0.46	Very limited: Slope Seepage	1.00 1.00
Oshtemo-----	15	Very limited: Filtering capacity Slope	1.00 0.96	Very limited: Slope Seepage	1.00 1.00
UhpC:					
Urban land-----	50	Not rated		Not rated	
Hillsdale-----	30	Somewhat limited: Restricted permeability	0.46	Very limited: Seepage Slope	1.00 1.00
Tracy-----	15	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Very limited: Slope Seepage	1.00 0.53
UhpD:					
Urban land-----	50	Not rated		Not rated	
Hillsdale-----	30	Somewhat limited: Slope Restricted permeability	0.96 0.46	Very limited: Slope Seepage	1.00 1.00
Tracy-----	15	Very limited: Filtering capacity Slope Restricted permeability	1.00 0.96 0.46	Very limited: Slope Seepage	1.00 0.53

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Uhwa:					
Urban land-----	50	Not rated		Not rated	
Martinsville-----	40	Somewhat limited: Restricted permeability	0.46	Somewhat limited: Seepage	0.53
UhwB:					
Urban land-----	50	Not rated		Not rated	
Martinsville-----	40	Somewhat limited: Restricted permeability	0.46	Somewhat limited: Seepage Slope	0.53 0.08
UhwC:					
Urban land-----	50	Not rated		Not rated	
Martinsville-----	40	Somewhat limited: Restricted permeability	0.46	Very limited: Slope Seepage	1.00 0.53
UkaA:					
Urban land-----	50	Not rated		Not rated	
Maumee-----	40	Very limited: Depth to saturated zone Filtering capacity Ponding	1.00 1.00 1.00	Very limited: Seepage Depth to saturated zone Ponding	1.00 1.00 1.00
UkeA:					
Urban land-----	50	Not rated		Not rated	
Milford-----	40	Very limited: Depth to saturated zone Restricted permeability Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
UkxA:					
Urban land-----	50	Not rated		Not rated	
Oshtemo-----	40	Very limited: Filtering capacity	1.00	Very limited: Seepage	1.00
UkxB:					
Urban land-----	50	Not rated		Not rated	
Oshtemo-----	40	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 0.08
UkxC:					
Urban land-----	50	Not rated		Not rated	
Oshtemo-----	40	Very limited: Filtering capacity	1.00	Very limited: Seepage Slope	1.00 1.00

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
UmfB:					
Urban land-----	50	Not rated		Not rated	
Riddles-----	25	Very limited: Restricted permeability	1.00	Somewhat limited: Seepage Slope	0.53 0.08
Metea-----	15	Very limited: Filtering capacity Restricted permeability	1.00 1.00	Very limited: Seepage Slope	1.00 0.08
UmfC:					
Urban land-----	50	Not rated		Not rated	
Riddles-----	25	Very limited: Restricted permeability	1.00	Very limited: Slope Seepage	1.00 0.53
Metea-----	15	Very limited: Filtering capacity Restricted permeability	1.00 1.00	Very limited: Seepage Slope	1.00 1.00
UmfD:					
Urban land-----	50	Not rated		Not rated	
Riddles-----	25	Very limited: Restricted permeability Slope	1.00 0.96	Very limited: Slope Seepage	1.00 0.53
Metea-----	15	Very limited: Filtering capacity Restricted permeability Slope	1.00 1.00 0.96	Very limited: Slope Seepage	1.00 1.00
UmpA:					
Urban land-----	50	Not rated		Not rated	
Schoolcraft-----	40	Very limited: Filtering capacity Restricted permeability	1.00 0.50	Very limited: Seepage	1.00
UmuA:					
Urban land-----	50	Not rated		Not rated	
Southwest-----	40	Very limited: Depth to saturated zone Restricted permeability Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding Seepage	1.00 1.00 0.53

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
UmwA:					
Urban land-----	50	Not rated		Not rated	
Tracy-----	40	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Somewhat limited: Seepage	0.53
UmwB:					
Urban land-----	50	Not rated		Not rated	
Tracy-----	40	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Somewhat limited: Seepage Slope	0.53 0.08
UmwC:					
Urban land-----	50	Not rated		Not rated	
Tracy-----	40	Very limited: Filtering capacity Restricted permeability	1.00 0.46	Very limited: Slope Seepage	1.00 0.53
UmwD:					
Urban land-----	50	Not rated		Not rated	
Tracy-----	40	Very limited: Filtering capacity Slope Restricted permeability	1.00 0.96 0.46	Very limited: Slope Seepage	1.00 0.53
UmxA:					
Urban land-----	50	Not rated		Not rated	
Troxel-----	40	Somewhat limited: Restricted permeability	0.46	Somewhat limited: Seepage	0.53
UnoA:					
Urban land-----	50	Not rated		Not rated	
Whitaker-----	40	Very limited: Depth to saturated zone Restricted permeability	1.00 0.46	Very limited: Depth to saturated zone Seepage	1.00 1.00
UnqB:					
Urban land-----	50	Not rated		Not rated	
Williamstown-----	25	Very limited: Depth to saturated zone Restricted permeability	1.00 1.00	Somewhat limited: Seepage Depth to saturated zone Slope	0.53 0.25 0.08

Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
UnqB:					
Crosier-----	15	Very limited:		Somewhat limited:	
		Depth to	1.00	Slope	0.08
		saturated zone		Depth to	0.01
		Restricted	1.00	saturated zone	
		permeability			
UntA:					
Urban land-----	50	Not rated		Not rated	
Wunabuna, drained---	40	Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone	
		Ponding	1.00	Seepage	1.00
		Restricted	0.46	Ponding	1.00
		permeability		Content of	1.00
				organic matter	
Usl:					
Udorthents, rubbish-	100	Not rated		Not rated	
W:					
Water-----	100	Not rated		Not rated	
WcnAI:					
Waterford-----	80	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Depth to	1.00	Seepage	1.00
		saturated zone		Depth to	1.00
		Filtering	1.00	saturated zone	
		capacity			
WoaA:					
Williamstown-----	85	Very limited:		Somewhat limited:	
		Depth to	1.00	Seepage	0.53
		saturated zone		Depth to	0.25
		Restricted	1.00	saturated zone	
		permeability			
WoaB2:					
Williamstown-----	85	Very limited:		Somewhat limited:	
		Depth to	1.00	Seepage	0.53
		saturated zone		Depth to	0.25
		Restricted	1.00	saturated zone	
		permeability		Slope	0.08
WoaC2:					
Williamstown-----	80	Very limited:		Very limited:	
		Depth to	1.00	Slope	1.00
		saturated zone		Seepage	0.53
		Restricted	1.00	Depth to	0.25
		permeability		saturated zone	
WobB:					
Williamstown-----	50	Very limited:		Somewhat limited:	
		Depth to	1.00	Seepage	0.53
		saturated zone		Depth to	0.25
		Restricted	1.00	saturated zone	
		permeability		Slope	0.08



Table 14a.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
WobB: Crosier-----	30	Very limited: Depth to saturated zone Restricted permeability	1.00 1.00	Somewhat limited: Slope Depth to saturated zone	0.08 0.01
WrxAN: Wunabuna, drained---	85	Very limited: Depth to saturated zone Ponding Restricted permeability	1.00 1.00 0.46	Very limited: Depth to saturated zone Seepage Ponding Content of organic matter	1.00 1.00 1.00 1.00
WtbA: Whitaker-----	75	Very limited: Depth to saturated zone Restricted permeability	1.00 0.46	Very limited: Depth to saturated zone Seepage	1.00 1.00
WujB: Williamstown-----	45	Very limited: Depth to saturated zone Restricted permeability	1.00 1.00	Somewhat limited: Seepage Depth to saturated zone Slope	0.53 0.25 0.08
Moon-----	40	Very limited: Depth to saturated zone Restricted permeability	1.00 1.00	Very limited: Seepage Depth to saturated zone Slope	1.00 0.56 0.08

Table 14b.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
<b>AahAK:</b>							
Abscota-----	80	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Too sandy	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00	Depth to saturated zone	0.11
		Too sandy	1.00				
<b>AatAN:</b>							
Ackerman, drained---	85	Very limited:		Very limited:		Very limited:	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
<b>AbhAN:</b>							
Adrian, drained----	75	Very limited:		Very limited:		Very limited:	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
<b>AbhAU:</b>							
Adrian, undrained---	75	Very limited:		Very limited:		Very limited:	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
<b>ApuAN:</b>							
Antung, drained----	75	Very limited:		Very limited:		Very limited:	
		Depth to saturated zone	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
<b>AxvA:</b>							
Auten-----	82	Very limited:		Very limited:		Very limited:	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too clayey	0.50
		Too clayey	0.50				
<b>BaaA:</b>							
Bainter-----	85	Very limited:		Very limited:		Very limited:	
		Seepage	1.00	Seepage	1.00	Seepage	1.00
<b>BaaB:</b>							
Bainter-----	85	Very limited:		Very limited:		Very limited:	
		Seepage	1.00	Seepage	1.00	Seepage	1.00

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BaaC2: Bainter-----	85	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Seepage	1.00
BbmA: Baugo-----	85	Very limited: Depth to saturated zone Too sandy	1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone Too sandy Seepage	1.00 1.00 1.00
BmgA: Blount-----	85	Very limited: Depth to saturated zone Too clayey	1.00 0.50	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Too clayey	1.00 0.50
BshA: Brady-----	90	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 0.52
BsxA: Brems-----	50	Very limited: Depth to saturated zone Seepage Too sandy	1.00 1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Too sandy Seepage Depth to saturated zone	1.00 1.00 0.47
Morocco-----	40	Very limited: Depth to saturated zone Seepage Too sandy	1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone Too sandy Seepage	1.00 1.00 1.00
BteA: Brems-----	80	Very limited: Depth to saturated zone Seepage Too sandy	1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Too sandy Seepage Depth to saturated zone	1.00 1.00 0.47
BuuA: Brookston-----	80	Very limited: Depth to saturated zone Ponding Too clayey	1.00 1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone Too clayey	1.00 1.00 0.50
CmbAI: Cohoctah-----	75	Very limited: Flooding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Flooding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 0.52
CnbA: Coloma-----	85	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Too sandy Seepage	1.00 1.00

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CnbB: Coloma-----	85	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Too sandy Seepage	1.00 1.00
CnbC: Coloma-----	85	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Too sandy Seepage	1.00 1.00
CnbD: Coloma-----	85	Very limited: Seepage Too sandy Slope	1.00 1.00 0.96	Very limited: Seepage Slope	1.00 0.96	Very limited: Too sandy Seepage Slope	1.00 1.00 0.96
CrrA: Coupee-----	85	Very limited: Seepage Too clayey	1.00 0.50	Very limited: Seepage	1.00	Somewhat limited: Too clayey	0.50
CvdA: Crosier-----	85	Very limited: Depth to saturated zone Too clayey	1.00 0.50	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Too clayey	1.00 0.50
CvdB: Crosier-----	80	Very limited: Depth to saturated zone Too clayey	1.00 0.50	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Too clayey	1.00 0.50
CwkA: Crumstown-----	80	Very limited: Depth to saturated zone Seepage Too sandy	1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Seepage Too sandy	1.00 1.00
CwkB: Crumstown-----	80	Very limited: Depth to saturated zone Seepage Too sandy	1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Seepage Too sandy	1.00 1.00
DcrA: Del Rey-----	85	Very limited: Depth to saturated zone Too clayey	1.00 0.50	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Too clayey	1.00 0.50
EchAN: Edwards, drained----	80	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Carbonate content	1.00 1.00 1.00

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EchAU: Edwards, undrained--	75	Very limited: Depth to saturated zone Ponding	1.00  1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00  1.00	Very limited: Ponding Depth to saturated zone Carbonate content	1.00  1.00
EcrAN: Edselton, drained---	70	Very limited: Depth to saturated zone Ponding Seepage	1.00  1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00  1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00  1.00 1.00
EcrAU: Edselton, undrained-	70	Very limited: Depth to saturated zone Ponding Seepage	1.00  1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00  1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00  1.00 1.00
EmeA: Elston-----	85	Very limited: Seepage Too sandy	1.00  1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00  0.50
GczA: Gilford-----	75	Very limited: Depth to saturated zone Seepage Too sandy Ponding	1.00  1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage Ponding	1.00  1.00 1.00	Very limited: Depth to saturated zone Too sandy Seepage Ponding	1.00  1.00 1.00 1.00
GdnA: Gilford-----	75	Very limited: Depth to saturated zone Seepage Too sandy Ponding	1.00  1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage Ponding	1.00  1.00 1.00	Very limited: Depth to saturated zone Too sandy Seepage Ponding	1.00  1.00 1.00 1.00
HfbAN: Henrietta, drained--	80	Very limited: Depth to saturated zone Too sandy Ponding	1.00  1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00  1.00	Very limited: Depth to saturated zone Ponding Too sandy	1.00  1.00 0.50
HfbAU: Henrietta, undrained	75	Very limited: Depth to saturated zone Ponding Too sandy	1.00  1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00  1.00	Very limited: Ponding Depth to saturated zone Too sandy	1.00  1.00 0.50
HkkA: Hillsdale-----	80	Very limited: Seepage	1.00	Not limited		Somewhat limited: Seepage	0.22

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HkkB:							
Hillsdale-----	80	Very limited: Seepage	1.00	Not limited		Somewhat limited: Seepage	0.22
HknC2:							
Hillsdale-----	55	Very limited: Seepage	1.00	Not limited		Somewhat limited: Seepage	0.22
Oshtemo-----	30	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00 0.50
HknD2:							
Hillsdale-----	55	Very limited: Seepage Slope	1.00 0.96	Somewhat limited: Slope	0.96	Somewhat limited: Slope Seepage	0.96 0.22
Oshtemo-----	30	Very limited: Seepage Too sandy Slope	1.00 1.00 0.96	Very limited: Seepage Slope	1.00 0.96	Very limited: Seepage Slope Too sandy	1.00 0.96 0.50
HkpC2:							
Hillsdale-----	55	Very limited: Seepage	1.00	Not limited		Somewhat limited: Seepage	0.22
Tracy-----	30	Very limited: Seepage	1.00	Not limited		Not limited	
HkpD2:							
Hillsdale-----	55	Very limited: Seepage Slope	1.00 0.96	Somewhat limited: Slope	0.96	Somewhat limited: Slope Seepage	0.96 0.22
Tracy-----	30	Very limited: Seepage Slope	1.00 0.96	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96
HtbAN:							
Houghton, drained---	75	Very limited: Depth to saturated zone Ponding Content of organic matter Seepage	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter Seepage	1.00 1.00 1.00 0.16
HtbAU:							
Houghton, undrained-	75	Very limited: Depth to saturated zone Ponding Content of organic matter Seepage	1.00 1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Content of organic matter Seepage	1.00 1.00 1.00 0.16

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
JaaAK: Jamestown-----	80	Very limited: Flooding Depth to saturated zone	1.00 1.00	Very limited: Flooding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Depth to saturated zone	1.00
MfaA: Martinsville-----	70	Somewhat limited: Too clayey	0.50	Not limited		Somewhat limited: Too clayey	0.50
MfaB2: Martinsville-----	70	Somewhat limited: Too clayey	0.50	Not limited		Somewhat limited: Too clayey	0.50
MfaC2: Martinsville-----	80	Somewhat limited: Too clayey	0.50	Not limited		Somewhat limited: Too clayey	0.50
MfrAN: Madaus, drained----	80	Very limited: Depth to saturated zone Ponding Seepage	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone Carbonate content	1.00 1.00 1.00
MfrAU: Madaus, undrained---	75	Very limited: Depth to saturated zone Ponding Seepage	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone Carbonate content	1.00 1.00 1.00
MgcA: Maumee-----	80	Very limited: Depth to saturated zone Seepage Too sandy Ponding	1.00 1.00 1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage Ponding	1.00 1.00 1.00 1.00	Very limited: Depth to saturated zone Too sandy Seepage Ponding	1.00 1.00 1.00 1.00 1.00
MgdAN: Martisco, drained---	75	Very limited: Depth to saturated zone Ponding	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone Carbonate content	1.00 1.00 1.00
MhaA: Maumee-----	80	Very limited: Depth to saturated zone Seepage Too sandy Ponding	1.00 1.00 1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage Ponding	1.00 1.00 1.00 1.00	Very limited: Depth to saturated zone Too sandy Seepage Ponding	1.00 1.00 1.00 1.00 1.00



Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MhbA:							
Maumee-----	90	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Ponding	1.00	Ponding	1.00
		saturated zone		Depth to	1.00	Depth to	1.00
		Ponding	1.00	saturated zone		saturated zone	
		Seepage	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
MmbC2:							
Miami-----	80	Very limited:		Very limited:		Somewhat limited:	
		Depth to	1.00	Depth to	1.00	Too clayey	0.50
		saturated zone		saturated zone		Depth to	0.47
		Too clayey	0.50			saturated zone	
MmdC3:							
Miami-----	80	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Depth to	0.86	Depth to	0.86	Too clayey	0.50
		saturated zone		saturated zone		Depth to	0.47
		Too clayey	0.50			saturated zone	
MmdD3:							
Miami-----	80	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Slope	0.96	Slope	0.96	Slope	0.96
		Depth to	0.86	Depth to	0.86	Too clayey	0.50
		saturated zone		saturated zone		Depth to	0.47
		Too clayey	0.50			saturated zone	
MouA:							
Milford-----	85	Very limited:		Very limited:		Very limited:	
		Depth to	1.00	Depth to	1.00	Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Too clayey	1.00	Ponding	1.00	Too clayey	1.00
		Ponding	1.00			Hard to compact	1.00
						Ponding	1.00
MsaA:							
Mishawaka-----	95	Very limited:		Very limited:		Very limited:	
		Seepage	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
MtsB2:							
Morley-----	75	Very limited:		Very limited:		Somewhat limited:	
		Depth to	1.00	Depth to	1.00	Depth to	0.86
		saturated zone		saturated zone		saturated zone	
		Too clayey	0.50			Too clayey	0.50
MtsC2:							
Morley-----	80	Very limited:		Very limited:		Somewhat limited:	
		Depth to	1.00	Depth to	1.00	Depth to	0.86
		saturated zone		saturated zone		saturated zone	
		Too clayey	0.50	Slope	0.04	Too clayey	0.50
		Slope	0.04			Slope	0.04
MubD3:							
Morley-----	80	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to	1.00	Depth to	1.00	Depth to	0.86
		saturated zone		saturated zone		saturated zone	
		Too clayey	0.50			Too clayey	0.50

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MvhAN: Moston, drained-----	80	Very limited: Depth to saturated zone Ponding Seepage Content of organic matter	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage Hard to compact	1.00 1.00 1.00 1.00
MvhAU: Moston, undrained---	75	Very limited: Depth to saturated zone Ponding Seepage Content of organic matter	1.00 1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage Hard to compact	1.00 1.00 1.00 1.00
MvkA: Morocco-----	85	Very limited: Depth to saturated zone Seepage Too sandy	1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone Too sandy Seepage	1.00 1.00 1.00
MwzAN: Muskego, drained---	75	Very limited: Depth to saturated zone Ponding Content of organic matter	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Hard to compact	1.00 1.00 1.00
MwzAU: Muskego, undrained--	70	Very limited: Depth to saturated zone Ponding Content of organic matter	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone Hard to compact	1.00 1.00 1.00
OkrA: Oshtemo-----	80	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00 0.50
OkrB: Oshtemo-----	80	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00 0.50
OkrC2: Oshtemo-----	80	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00 0.50
OkrD: Oshtemo-----	80	Very limited: Seepage Too sandy Slope	1.00 1.00 0.96	Very limited: Seepage Slope	1.00 0.96	Very limited: Seepage Slope Too sandy	1.00 0.96 0.50

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OlcA:							
Oshtemo-----	80	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00 0.50
OlcB:							
Oshtemo-----	80	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00 0.50
OlcC2:							
Oshtemo-----	80	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00 0.50
OlcD:							
Oshtemo-----	80	Very limited: Seepage Too sandy Slope	1.00 1.00 0.96	Very limited: Seepage Slope	1.00 0.96	Very limited: Seepage Slope Too sandy	1.00 0.96 0.50
OmgA:							
Osolo-----	85	Very limited: Depth to saturated zone Seepage Too sandy	1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Too sandy Seepage	1.00 1.00
PaaAN:							
Palms, drained-----	80	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Seepage Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Ponding	1.00 1.00
PaaAU:							
Palms, undrained----	75	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Ponding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00
Pmg:							
Pits, gravel-----	100	Not rated		Not rated		Not rated	
PxlA:							
Psammaquents-----	85	Not rated		Not rated		Not rated	
Pxo:							
Psamments-----	85	Not rated		Not rated		Not rated	
QuiA:							
Quinn-----	80	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
QujA: Quinn-----	75	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
RenA: Rensselaer-----	85	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone Too sandy Too clayey	1.00 1.00 1.00 0.50
ReyA: Rensselaer-----	75	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone Too sandy Too clayey	1.00 1.00 1.00 0.50
RopA: Riddles-----	50	Not limited		Not limited		Not limited	
Oshtemo-----	35	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00 0.50
RopB: Riddles-----	50	Not limited		Not limited		Not limited	
Oshtemo-----	35	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00 0.50
RopC2: Riddles-----	50	Not limited		Not limited		Not limited	
Oshtemo-----	35	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00 0.50
RopD2: Riddles-----	50	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96
Oshtemo-----	35	Very limited: Seepage Too sandy Slope	1.00 1.00 0.96	Very limited: Seepage Slope	1.00 0.96	Very limited: Seepage Slope Too sandy	1.00 0.96 0.50
RoqB: Riddles-----	55	Not limited		Not limited		Not limited	
Metea-----	30	Not limited		Very limited: Seepage	1.00	Not limited	

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RoqC2:							
Riddles-----	55	Not limited		Not limited		Not limited	
Metea-----	30	Not limited		Very limited: Seepage	1.00	Not limited	
RoqD2:							
Riddles-----	50	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96
Metea-----	30	Somewhat limited: Slope	0.96	Very limited: Seepage Slope	1.00 0.96	Somewhat limited: Slope	0.96
SdzA:							
Selfridge-----	50	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone	1.00
Crosier-----	35	Very limited: Depth to saturated zone Too clayey	1.00 0.50	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Too clayey	1.00 0.50
SdzaB:							
Selfridge-----	50	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone	1.00
Brems-----	35	Very limited: Depth to saturated zone Seepage Too sandy	1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Too sandy Seepage Depth to saturated zone	1.00 1.00 0.47
SesA:							
Schoolcraft-----	80	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Too sandy Seepage	1.00 1.00
Sn1A:							
Southwest-----	75	Very limited: Depth to saturated zone Ponding Too clayey	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding Too clayey	1.00 1.00 0.50
TmpA:							
Tracy-----	80	Very limited: Seepage	1.00	Not limited		Not limited	
TmpB:							
Tracy-----	80	Very limited: Seepage	1.00	Not limited		Not limited	
TmpC2:							
Tracy-----	80	Very limited: Seepage	1.00	Not limited		Not limited	

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TmpD:							
Tracy-----	80	Very limited: Seepage Slope	1.00 0.96	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96
TnwA:							
Troxel-----	80	Very limited: Seepage	1.00	Not limited		Not limited	
TxuA:							
Tyner-----	85	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Too sandy Seepage	1.00 1.00
TxuB:							
Tyner-----	85	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Too sandy Seepage	1.00 1.00
TxuC:							
Tyner-----	85	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Too sandy Seepage	1.00 1.00
TxuD:							
Tyner-----	85	Very limited: Seepage Too sandy Slope	1.00 1.00 0.96	Very limited: Seepage Slope	1.00 0.96	Very limited: Too sandy Seepage Slope	1.00 1.00 0.96
TxuF:							
Tyner-----	80	Very limited: Slope Seepage Too sandy	1.00 1.00 1.00	Very limited: Slope Seepage	1.00 1.00	Very limited: Slope Too sandy Seepage	1.00 1.00 1.00
Uam:							
Udorthents, loamy---	100	Not rated		Not rated		Not rated	
UdeA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Seepage	1.00
UdeB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Seepage	1.00
UdeC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Seepage	1.00

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UdkA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brady-----	40	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 0.52
UdzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Auten-----	40	Very limited: Depth to saturated zone Seepage Too clayey	1.00 1.00 0.50	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone Too clayey	1.00 0.50
UeaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Crosier-----	40	Very limited: Depth to saturated zone Too clayey	1.00 0.50	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Too clayey	1.00 0.50
UeqA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Gilford-----	40	Very limited: Depth to saturated zone Seepage Too sandy Ponding	1.00 1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Too sandy Seepage Ponding	1.00 1.00 1.00 1.00
UewA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brems-----	25	Very limited: Depth to saturated zone Seepage Too sandy	1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Too sandy Seepage Depth to saturated zone	1.00 1.00 0.47
Morocco-----	15	Very limited: Depth to saturated zone Seepage Too sandy	1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone Too sandy Seepage	1.00 1.00 1.00
Ufba:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brookston-----	40	Very limited: Depth to saturated zone Ponding Too clayey	1.00 1.00 0.50	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone Too clayey	1.00 1.00 0.50



Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UfhA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
UfhB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
UfhC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
UfmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coupee-----	40	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Somewhat limited: Too clayey	0.50
		Too clayey	0.50				
UfrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Del Rey-----	40	Very limited: Depth to	1.00	Very limited: Depth to	1.00	Very limited: Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Too clayey	0.50			Too clayey	0.50
UftA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Elston-----	40	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Seepage	1.00
		Too sandy	1.00			Too sandy	0.50
UfzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Mishawaka-----	45	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
UgaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Morocco-----	40	Very limited: Depth to	1.00	Very limited: Depth to	1.00	Very limited: Depth to	1.00
		saturated zone		saturated zone		saturated zone	
		Seepage	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ug1A:							
Urban land-----	50	Not rated		Not rated		Not rated	
Osolo-----	40	Very limited: Depth to saturated zone Seepage Too sandy	1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Too sandy Seepage	1.00 1.00
UgrA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Rensselaer-----	40	Very limited: Depth to saturated zone Ponding Too sandy	1.00 1.00 1.00	Very limited: Ponding Depth to saturated zone	1.00 1.00	Very limited: Ponding Depth to saturated zone Too sandy Too clayey	1.00 1.00 1.00 0.50
UgsA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Not limited	
Oshtemo-----	15	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00 0.50
UgsB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Not limited	
Oshtemo-----	15	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Seepage Too sandy	1.00 0.50
UgvA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Too sandy Seepage	1.00 1.00
UgvB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Too sandy Seepage	1.00 1.00
UgvC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Too sandy Seepage	1.00 1.00

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UgvD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Too sandy	1.00
		Too sandy	1.00	Slope	0.96	Seepage	1.00
		Slope	0.96			Slope	0.96
UhmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Very limited: Seepage	1.00	Not limited		Somewhat limited: Seepage	0.22
UhmB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Very limited: Seepage	1.00	Not limited		Somewhat limited: Seepage	0.22
UhoC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Very limited: Seepage	1.00	Not limited		Somewhat limited: Seepage	0.22
Oshtemo-----	15	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Seepage	1.00
		Too sandy	1.00			Too sandy	0.50
UhoD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Very limited: Seepage	1.00	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96
		Slope	0.96			Seepage	0.22
Oshtemo-----	15	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Seepage	1.00
		Too sandy	1.00	Slope	0.96	Slope	0.96
		Slope	0.96			Too sandy	0.50
UhpC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Very limited: Seepage	1.00	Not limited		Somewhat limited: Seepage	0.22
Tracy-----	15	Very limited: Seepage	1.00	Not limited		Not limited	
UhpD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Very limited: Seepage	1.00	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96
		Slope	0.96			Seepage	0.22
Tracy-----	15	Very limited: Seepage	1.00	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96
		Slope	0.96				

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Uhwa:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Somewhat limited: Too clayey	0.50	Not limited		Somewhat limited: Too clayey	0.50
UhwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Somewhat limited: Too clayey	0.50	Not limited		Somewhat limited: Too clayey	0.50
UhwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Somewhat limited: Too clayey	0.50	Not limited		Somewhat limited: Too clayey	0.50
UkaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Maumee-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Seepage	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00	Ponding	1.00	Seepage	1.00
		Ponding	1.00			Ponding	1.00
UkeA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Milford-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone	1.00
		Too clayey	1.00	Ponding	1.00	Too clayey	1.00
		Ponding	1.00			Hard to compact	1.00
						Ponding	1.00
UkxA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Seepage	1.00
		Too sandy	1.00			Too sandy	0.50
UkxB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Seepage	1.00
		Too sandy	1.00			Too sandy	0.50
UkxC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Very limited: Seepage	1.00	Very limited: Seepage	1.00	Very limited: Seepage	1.00
		Too sandy	1.00			Too sandy	0.50

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UmfB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Not limited	
Metea-----	15	Not limited		Very limited: Seepage	1.00	Not limited	
UmfC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Not limited		Not limited		Not limited	
Metea-----	15	Not limited		Very limited: Seepage	1.00	Not limited	
UmfD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96
Metea-----	15	Somewhat limited: Slope	0.96	Very limited: Seepage Slope	1.00 0.96	Somewhat limited: Slope	0.96
UmpA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Schoolcraft-----	40	Very limited: Seepage Too sandy	1.00 1.00	Very limited: Seepage	1.00	Very limited: Too sandy Seepage	1.00 1.00
UmuA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Southwest-----	40	Very limited: Depth to saturated zone Ponding Too clayey	1.00 1.00 0.50	Very limited: Depth to saturated zone Ponding	1.00 1.00	Very limited: Depth to saturated zone Ponding Too clayey	1.00 1.00 0.50
UmwA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Very limited: Seepage	1.00	Not limited		Not limited	
UmwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Very limited: Seepage	1.00	Not limited		Not limited	
UmwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Very limited: Seepage	1.00	Not limited		Not limited	

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UmwD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Very limited: Seepage Slope	1.00 0.96	Somewhat limited: Slope	0.96	Somewhat limited: Slope	0.96
UmxA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Troxel-----	40	Very limited: Seepage	1.00	Not limited		Not limited	
UnoA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Whitaker-----	40	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone Too clayey Seepage	1.00 0.50 0.22
UnqB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Williamstown-----	25	Very limited: Depth to saturated zone Too clayey	1.00 0.50	Very limited: Depth to saturated zone	1.00	Somewhat limited: Depth to saturated zone Too clayey	0.86 0.50
Crosier-----	15	Very limited: Depth to saturated zone Too clayey	1.00 0.50	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Too clayey	1.00 0.50
UntA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Wunabuna, drained---	40	Very limited: Depth to saturated zone Content of organic matter Seepage Ponding	1.00 1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage Ponding	1.00 1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding Seepage	1.00 1.00 1.00 0.16
Usl:							
Udorthents, rubbish-	100	Not rated		Not rated		Not rated	
W:							
Water-----	100	Not rated		Not rated		Not rated	
WcnAI:							
Waterford-----	80	Very limited: Flooding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Flooding Depth to saturated zone Seepage	1.00 1.00 1.00	Very limited: Depth to saturated zone Seepage	1.00 0.52

Table 14b.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WoaA: Williamstown-----	85	Very limited: Depth to saturated zone Too clayey	1.00  0.50	Very limited: Depth to saturated zone	1.00	Somewhat limited: Depth to saturated zone Too clayey	0.86  0.50
WoaB2: Williamstown-----	85	Very limited: Depth to saturated zone Too clayey	1.00  0.50	Very limited: Depth to saturated zone	1.00	Somewhat limited: Depth to saturated zone Too clayey	0.86  0.50
WoaC2: Williamstown-----	80	Very limited: Depth to saturated zone Too clayey	1.00  0.50	Very limited: Depth to saturated zone	1.00	Somewhat limited: Depth to saturated zone Too clayey	0.86  0.50
WobB: Williamstown-----	50	Very limited: Depth to saturated zone Too clayey	1.00  0.50	Very limited: Depth to saturated zone	1.00	Somewhat limited: Depth to saturated zone Too clayey	0.86  0.50
Crosier-----	30	Very limited: Depth to saturated zone Too clayey	1.00  0.50	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Too clayey	1.00  0.50
WrxAN: Wunabuna, drained---	85	Very limited: Depth to saturated zone Content of organic matter Seepage Ponding	1.00  1.00  1.00 1.00	Very limited: Depth to saturated zone Seepage Ponding	1.00  1.00 1.00	Very limited: Depth to saturated zone Content of organic matter Ponding Seepage	1.00  1.00  1.00 0.16
WtbA: Whitaker-----	75	Very limited: Depth to saturated zone Seepage	1.00  1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Very limited: Depth to saturated zone Too clayey Seepage	1.00  0.50 0.22
WujB: Williamstown-----	45	Very limited: Depth to saturated zone Too clayey	1.00  0.50	Very limited: Depth to saturated zone	1.00	Somewhat limited: Depth to saturated zone Too clayey	0.86  0.50
Moon-----	40	Very limited: Depth to saturated zone	1.00	Very limited: Depth to saturated zone Seepage	1.00 1.00	Somewhat limited: Depth to saturated zone	0.68



Table 15a.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
AahAK:					
Absecon-----	80	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.15
		Bottom layer	0.00	Bottom layer	0.50
AatAN:					
Ackerman, drained---	85	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.10
AbhAN:					
Adrian, drained----	75	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.11
AbhAU:					
Adrian, undrained---	75	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.11
ApuAN:					
Antung, drained----	75	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.43
AxvA:					
Auten-----	82	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.31
BaaA:					
Bainter-----	85	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.09
		Bottom layer	0.69	Bottom layer	0.84
BaaB:					
Bainter-----	85	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.09
		Bottom layer	0.69	Bottom layer	0.84
BaaC2:					
Bainter-----	85	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.09
		Bottom layer	0.69	Bottom layer	0.84
BbmA:					
Baugo-----	85	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.22

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
BmgA:					
Blount-----	85	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BshA:					
Brady-----	90	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.07
		Bottom layer	0.69	Bottom layer	0.76
BsxA:					
Brems-----	50	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.17
		Thickest layer	0.00	Thickest layer	0.17
Morocco-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.43
		Thickest layer	0.00	Bottom layer	0.67
BteA:					
Brems-----	80	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.17
		Thickest layer	0.00	Thickest layer	0.17
BuuA:					
Brookston-----	80	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CmbAI:					
Cohoctah-----	75	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.50
CnbA:					
Coloma-----	85	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.58
		Thickest layer	0.00	Bottom layer	0.84
CnbB:					
Coloma-----	85	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.58
		Thickest layer	0.00	Bottom layer	0.84
CnbC:					
Coloma-----	85	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.58
		Thickest layer	0.00	Bottom layer	0.84
CnbD:					
Coloma-----	85	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.58
		Thickest layer	0.00	Bottom layer	0.84
CrrA:					
Coupee-----	85	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.66	Bottom layer	0.50

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
CvdA:					
Crosier-----	85	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CvdB:					
Crosier-----	80	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CwkA:					
Crumstown-----	80	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.10
		Thickest layer	0.00	Thickest layer	0.19
CwkB:					
Crumstown-----	80	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.10
		Thickest layer	0.00	Thickest layer	0.19
DcrA:					
Del Rey-----	85	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
EchAN:					
Edwards, drained---	80	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
EchAU:					
Edwards, undrained--	75	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
EcrAN:					
Edselton, drained---	70	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.43
EcrAU:					
Edselton, undrained-	70	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.43
EmeA:					
Elston-----	85	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.12
		Bottom layer	0.15	Bottom layer	0.76
GczA:					
Gilford-----	75	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.08
		Bottom layer	0.00	Bottom layer	0.43
GdnA:					
Gilford-----	75	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.08
		Bottom layer	0.00	Bottom layer	0.43

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
HfbAN:					
Henrietta, drained--	80	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.01
HfbAU:					
Henrietta, undrained	75	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.01
Hkka:					
Hillsdale-----	80	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.07
HkkB:					
Hillsdale-----	80	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.07
HknC2:					
Hillsdale-----	55	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.07
Oshtemo-----	30	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
HknD2:					
Hillsdale-----	55	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.07
Oshtemo-----	30	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
HkpC2:					
Hillsdale-----	55	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.07
Tracy-----	30	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.23	Bottom layer	0.43
HkpD2:					
Hillsdale-----	55	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.07
Tracy-----	30	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.23	Bottom layer	0.43

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
HtbAN:					
Houghton, drained---	75	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
HtbAU:					
Houghton, undrained-	75	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
JaaAK:					
Jamestown-----	80	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MfaA:					
Martinsville-----	70	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
MfaB2:					
Martinsville-----	70	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
MfaC2:					
Martinsville-----	80	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
MfrAN:					
Madaus, drained----	80	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.97
MfrAU:					
Madaus, undrained---	75	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.97
MgcA:					
Maumee-----	80	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.58
		Thickest layer	0.00	Bottom layer	0.97
MgdAN:					
Martisco, drained---	75	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MhaA:					
Maumee-----	80	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.26
		Thickest layer	0.00	Bottom layer	0.76

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
MhbA:					
Maumee-----	90	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.26
		Thickest layer	0.00	Bottom layer	0.76
MmbC2:					
Miami-----	80	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MmdC3:					
Miami-----	80	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MmdD3:					
Miami-----	80	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MouA:					
Milford-----	85	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MsaA:					
Mishawaka-----	95	Poor:		Good	
		Bottom layer	0.00	Thickest layer	0.76
		Thickest layer	0.00		
MtsB2:					
Morley-----	75	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MtsC2:					
Morley-----	80	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MubD3:					
Morley-----	80	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MvhAN:					
Moston, drained----	80	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.43
MvhAU:					
Moston, undrained---	75	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.43
MvkA:					
Morocco-----	85	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.43
		Thickest layer	0.00	Bottom layer	0.67

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
MwzAN: Muskego, drained----	75	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MwzAU: Muskego, undrained--	70	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
OkrA: Oshtemo-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
OkrB: Oshtemo-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
OkrC2: Oshtemo-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
OkrD: Oshtemo-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
OlcA: Oshtemo-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
OlcB: Oshtemo-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
OlcC2: Oshtemo-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
OlcD: Oshtemo-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
OmgA: Osolo-----	85	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.10
		Thickest layer	0.00	Thickest layer	0.11
PaaAN: Palms, drained-----	80	Poor:		Poor:	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00



Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
PaaAU: Palms, undrained----	75	Poor: Thickest layer Bottom layer	0.00 0.00	Poor: Bottom layer Thickest layer	0.00 0.00
Pmg: Pits, gravel-----	100	Not rated		Not rated	
Px1A: Psammaquents-----	85	Not rated		Not rated	
Pxo: Psammments-----	85	Not rated		Not rated	
QuiA: Quinn-----	80	Poor: Thickest layer Bottom layer	0.00 0.00	Fair: Thickest layer Bottom layer	0.00 0.09
QujA: Quinn-----	75	Poor: Thickest layer Bottom layer	0.00 0.00	Fair: Thickest layer Bottom layer	0.00 0.09
RenA: Rensselaer-----	85	Poor: Bottom layer Thickest layer	0.00 0.00	Poor: Bottom layer Thickest layer	0.00 0.00
ReyA: Rensselaer-----	75	Poor: Bottom layer Thickest layer	0.00 0.00	Poor: Bottom layer Thickest layer	0.00 0.00
RopA: Riddles-----	50	Poor: Bottom layer Thickest layer	0.00 0.00	Poor: Bottom layer Thickest layer	0.00 0.00
Oshtemo-----	35	Fair: Thickest layer Bottom layer	0.00 0.68	Fair: Thickest layer Bottom layer	0.11 0.58
RopB: Riddles-----	50	Poor: Bottom layer Thickest layer	0.00 0.00	Poor: Bottom layer Thickest layer	0.00 0.00
Oshtemo-----	35	Fair: Thickest layer Bottom layer	0.00 0.68	Fair: Thickest layer Bottom layer	0.11 0.58
RopC2: Riddles-----	50	Poor: Bottom layer Thickest layer	0.00 0.00	Poor: Bottom layer Thickest layer	0.00 0.00
Oshtemo-----	35	Fair: Thickest layer Bottom layer	0.00 0.68	Fair: Thickest layer Bottom layer	0.11 0.58

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
RopD2:					
Riddles-----	50	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Oshtemo-----	35	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
RoqB:					
Riddles-----	55	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Metea-----	30	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.13
RoqC2:					
Riddles-----	55	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Metea-----	30	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.13
RoqD2:					
Riddles-----	50	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Metea-----	30	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.13
SdzA:					
Selfridge-----	50	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.09
Crosier-----	35	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
SdzaB:					
Selfridge-----	50	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.09
Brems-----	35	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.17
		Thickest layer	0.00	Thickest layer	0.17
SesA:					
Schoolcraft-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.67
		Bottom layer	0.69	Bottom layer	0.90

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
SnlA: Southwest-----	75	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
TmpA: Tracy-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.23	Bottom layer	0.43
TmpB: Tracy-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.23	Bottom layer	0.43
TmpC2: Tracy-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.23	Bottom layer	0.43
TmpD: Tracy-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.23	Bottom layer	0.43
TnwA: Troxel-----	80	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.03
TxuA: Tyner-----	85	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.67
		Thickest layer	0.00	Bottom layer	0.99
TxuB: Tyner-----	85	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.67
		Thickest layer	0.00	Bottom layer	0.99
TxuC: Tyner-----	85	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.67
		Thickest layer	0.00	Bottom layer	0.99
TxuD: Tyner-----	85	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.67
		Thickest layer	0.00	Bottom layer	0.99
TxuF: Tyner-----	80	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.67
		Thickest layer	0.00	Bottom layer	0.99
Uam: Udorthents, loamy---	100	Not rated		Not rated	

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
UdeA:					
Urban land-----	50	Not rated		Not rated	
Bainter-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.09
		Bottom layer	0.69	Bottom layer	0.84
UdeB:					
Urban land-----	50	Not rated		Not rated	
Bainter-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.09
		Bottom layer	0.69	Bottom layer	0.84
UdeC:					
Urban land-----	50	Not rated		Not rated	
Bainter-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.09
		Bottom layer	0.69	Bottom layer	0.84
UdkA:					
Urban land-----	50	Not rated		Not rated	
Brady-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.07
		Bottom layer	0.69	Bottom layer	0.76
UdzA:					
Urban land-----	50	Not rated		Not rated	
Auten-----	40	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.31
UeaA:					
Urban land-----	50	Not rated		Not rated	
Crosier-----	40	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
UeqA:					
Urban land-----	50	Not rated		Not rated	
Gilford-----	40	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.08
		Bottom layer	0.00	Bottom layer	0.43
UewA:					
Urban land-----	50	Not rated		Not rated	
Brems-----	25	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.17
		Thickest layer	0.00	Thickest layer	0.17
Morocco-----	15	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.43
		Thickest layer	0.00	Bottom layer	0.67

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
UfbA:					
Urban land-----	50	Not rated		Not rated	
Brookston-----	40	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
UfhA:					
Urban land-----	50	Not rated		Not rated	
Coloma-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.58
		Thickest layer	0.00	Bottom layer	0.84
UfhB:					
Urban land-----	50	Not rated		Not rated	
Coloma-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.58
		Thickest layer	0.00	Bottom layer	0.84
UfhC:					
Urban land-----	50	Not rated		Not rated	
Coloma-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.58
		Thickest layer	0.00	Bottom layer	0.84
UfmA:					
Urban land-----	50	Not rated		Not rated	
Coupee-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.66	Bottom layer	0.50
UfrA:					
Urban land-----	50	Not rated		Not rated	
Del Rey-----	40	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
UftA:					
Urban land-----	50	Not rated		Not rated	
Elston-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.12
		Bottom layer	0.15	Bottom layer	0.76
UfzA:					
Urban land-----	50	Not rated		Not rated	
Mishawaka-----	45	Poor:		Good	
		Bottom layer	0.00	Thickest layer	0.76
		Thickest layer	0.00		

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
UgaA:					
Urban land-----	50	Not rated		Not rated	
Morocco-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.43
		Thickest layer	0.00	Bottom layer	0.67
UglA:					
Urban land-----	50	Not rated		Not rated	
Osolo-----	40	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.10
		Thickest layer	0.00	Thickest layer	0.11
UgrA:					
Urban land-----	50	Not rated		Not rated	
Rensselaer-----	40	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
UgsA:					
Urban land-----	50	Not rated		Not rated	
Riddles-----	25	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Oshtemo-----	15	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
UgsB:					
Urban land-----	50	Not rated		Not rated	
Riddles-----	25	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Oshtemo-----	15	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
UgvA:					
Urban land-----	50	Not rated		Not rated	
Tyner-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.67
		Thickest layer	0.00	Bottom layer	0.99
UgvB:					
Urban land-----	50	Not rated		Not rated	
Tyner-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.67
		Thickest layer	0.00	Bottom layer	0.99

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
UgvC:					
Urban land-----	50	Not rated		Not rated	
Tyner-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.67
		Thickest layer	0.00	Bottom layer	0.99
UgvD:					
Urban land-----	50	Not rated		Not rated	
Tyner-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.67
		Thickest layer	0.00	Bottom layer	0.99
UhmA:					
Urban land-----	50	Not rated		Not rated	
Hillsdale-----	40	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.07
UhmB:					
Urban land-----	50	Not rated		Not rated	
Hillsdale-----	40	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.07
UhoC:					
Urban land-----	50	Not rated		Not rated	
Hillsdale-----	30	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.07
Oshtemo-----	15	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
UhoD:					
Urban land-----	50	Not rated		Not rated	
Hillsdale-----	30	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.07
Oshtemo-----	15	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
UhpC:					
Urban land-----	50	Not rated		Not rated	
Hillsdale-----	30	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.07
Tracy-----	15	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.23	Bottom layer	0.43



Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
UhpD:					
Urban land-----	50	Not rated		Not rated	
Hillsdale-----	30	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.07
Tracy-----	15	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.23	Bottom layer	0.43
UhwA:					
Urban land-----	50	Not rated		Not rated	
Martinsville-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
UhwB:					
Urban land-----	50	Not rated		Not rated	
Martinsville-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
UhwC:					
Urban land-----	50	Not rated		Not rated	
Martinsville-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
UkaA:					
Urban land-----	50	Not rated		Not rated	
Maumee-----	40	Poor:		Fair:	
		Bottom layer	0.00	Thickest layer	0.58
		Thickest layer	0.00	Bottom layer	0.97
UkeA:					
Urban land-----	50	Not rated		Not rated	
Milford-----	40	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
UkxA:					
Urban land-----	50	Not rated		Not rated	
Oshtemo-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
UkxB:					
Urban land-----	50	Not rated		Not rated	
Oshtemo-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
UkxC:					
Urban land-----	50	Not rated		Not rated	
Oshtemo-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.11
		Bottom layer	0.68	Bottom layer	0.58
UmfB:					
Urban land-----	50	Not rated		Not rated	
Riddles-----	25	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Metea-----	15	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.13
UmfC:					
Urban land-----	50	Not rated		Not rated	
Riddles-----	25	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Metea-----	15	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.13
UmfD:					
Urban land-----	50	Not rated		Not rated	
Riddles-----	25	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Metea-----	15	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.13
UmpA:					
Urban land-----	50	Not rated		Not rated	
Schoolcraft-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.67
		Bottom layer	0.69	Bottom layer	0.90
UmuA:					
Urban land-----	50	Not rated		Not rated	
Southwest-----	40	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
UmwA:					
Urban land-----	50	Not rated		Not rated	
Tracy-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.23	Bottom layer	0.43

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
UmwB:					
Urban land-----	50	Not rated		Not rated	
Tracy-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.23	Bottom layer	0.43
UmwC:					
Urban land-----	50	Not rated		Not rated	
Tracy-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.23	Bottom layer	0.43
UmwD:					
Urban land-----	50	Not rated		Not rated	
Tracy-----	40	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.04
		Bottom layer	0.23	Bottom layer	0.43
UmxA:					
Urban land-----	50	Not rated		Not rated	
Troxel-----	40	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.03
UnoA:					
Urban land-----	50	Not rated		Not rated	
Whitaker-----	40	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.08
UnqB:					
Urban land-----	50	Not rated		Not rated	
Williamstown-----	25	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Crosier-----	15	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
UntA:					
Urban land-----	50	Not rated		Not rated	
Wunabuna, drained---	40	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Usl:					
Udorthents, rubbish-	100	Not rated		Not rated	
W:					
Water-----	100	Not rated		Not rated	

Table 15a.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel	Potential source of sand		
		Rating class	Value	Rating class	Value
WcnAI:					
Waterford-----	80	Fair:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.71	Bottom layer	0.67
WoaA:					
Williamstown-----	85	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WoaB2:					
Williamstown-----	85	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WoaC2:					
Williamstown-----	80	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WobB:					
Williamstown-----	50	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Crosier-----	30	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WrxAN:					
Wunabuna, drained---	85	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WtbA:					
Whitaker-----	75	Poor:		Fair:	
		Thickest layer	0.00	Thickest layer	0.00
		Bottom layer	0.00	Bottom layer	0.08
WujB:					
Williamstown-----	45	Poor:		Poor:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Moon-----	40	Poor:		Fair:	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.13

Table 15b.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
<b>AahAK:</b>							
Abscota-----	80	Poor:		Good		Poor:	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Rock fragments	0.50
		Low content of organic matter	0.00				
		Droughty	0.26				
<b>AatAN:</b>							
Ackerman, drained---	85	Poor:		Poor:		Poor:	
		Too sandy	0.00	Depth to	0.00	Too sandy	0.00
		Wind erosion	0.00	saturated zone		Depth to	0.00
		Low content of organic matter	0.18			saturated zone	
		Carbonate content	0.92			Carbonate content	0.92
<b>AbhAN:</b>							
Adrian, drained----	75	Poor:		Poor:		Poor:	
		Wind erosion	0.00	Depth to	0.00	Depth to	0.00
		Low content of organic matter	0.18	saturated zone		saturated zone	
		Carbonate content	0.92			Content of organic matter	0.00
<b>AbhAU:</b>							
Adrian, undrained---	75	Poor:		Poor:		Poor:	
		Wind erosion	0.00	Depth to	0.00	Depth to	0.00
		Low content of organic matter	0.18	saturated zone		saturated zone	
		Carbonate content	0.92			Content of organic matter	0.00
<b>ApuAN:</b>							
Antung, drained----	75	Poor:		Poor:		Poor:	
		Too sandy	0.00	Depth to	0.00	Too sandy	0.00
		Wind erosion	0.00	saturated zone		Depth to	0.00
		Low content of organic matter	0.18			saturated zone	
		Carbonate content	0.92			Rock fragments	0.50
						Carbonate content	0.92
<b>AxvA:</b>							
Auten-----	82	Fair:		Poor:		Poor:	
		Droughty	0.24	Depth to	0.00	Depth to	0.00
		Low content of organic matter	0.50	saturated zone		saturated zone	
		Too acid	0.95	Low strength	0.00		
				Shrink-swell	0.87		
<b>BaaA:</b>							
Bainter-----	85	Fair:		Good		Fair:	
		Low content of organic matter	0.50			Hard to reclaim	0.32
		Too acid	0.97			Rock fragments	0.88
<b>BaaB:</b>							
Bainter-----	85	Fair:		Good		Fair:	
		Low content of organic matter	0.50			Hard to reclaim	0.32
		Too acid	0.97			Rock fragments	0.88

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BaaC2: Bainter-----	85	Fair: Low content of organic matter Too acid	0.50 0.97	Good		Fair: Hard to reclaim Rock fragments	0.32 0.88
BbmA: Baugo-----	85	Fair: Low content of organic matter Carbonate content Water erosion Too clayey	0.02 0.68 0.90 0.98	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Too clayey Hard to reclaim	0.00 0.64 0.94
BmgA: Blount-----	85	Fair: Low content of organic matter Too clayey Too acid Water erosion Carbonate content	0.12 0.50 0.68 0.90 0.97	Poor: Depth to saturated zone Low strength Shrink-swell	0.00 0.00 0.87	Poor: Depth to saturated zone Hard to reclaim Too clayey	0.00 0.05 0.29
BshA: Brady-----	90	Poor: Low content of organic matter Too acid Carbonate content	0.00 0.84 0.97	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Rock fragments	0.00 0.50
BsxA: Brems-----	50	Poor: Wind erosion Low content of organic matter Too sandy Too acid	0.00 0.12 0.14 0.54	Fair: Depth to saturated zone	0.89	Fair: Too sandy Depth to saturated zone	0.14 0.89
Morocco-----	40	Poor: Too sandy Wind erosion Low content of organic matter Too acid	0.00 0.00 0.12 0.54	Poor: Depth to saturated zone	0.00	Poor: Too sandy Depth to saturated zone Too acid	0.00 0.00 0.98
BteA: Brems-----	80	Poor: Wind erosion Low content of organic matter Too sandy Too acid	0.00 0.12 0.14 0.54	Fair: Depth to saturated zone	0.89	Fair: Too sandy Depth to saturated zone	0.14 0.89
BuuA: Brookston-----	80	Fair: Carbonate content	0.68	Poor: Depth to saturated zone Low strength Shrink-swell	0.00 0.00 0.96	Poor: Depth to saturated zone	0.00

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material	Potential source of roadfill		Potential source of topsoil		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CmbAI: Cohoctah-----	75	Fair: Carbonate content	0.54	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone	0.00
CnbA: Coloma-----	85	Poor: Too sandy Wind erosion Low content of organic matter Too acid	0.00 0.00 0.12 0.88	Good		Poor: Too sandy	0.00
CnbB: Coloma-----	85	Poor: Too sandy Wind erosion Low content of organic matter Too acid	0.00 0.00 0.12 0.88	Good		Poor: Too sandy	0.00
CnbC: Coloma-----	85	Poor: Too sandy Wind erosion Low content of organic matter Too acid	0.00 0.00 0.12 0.88	Good		Poor: Too sandy	0.00
CnbD: Coloma-----	85	Poor: Too sandy Wind erosion Low content of organic matter Too acid	0.00 0.00 0.12 0.88	Good		Poor: Too sandy Slope	0.00 0.04
CrrA: Coupee-----	85	Fair: Too acid Water erosion	0.54 0.99	Poor: Low strength	0.00	Good	
CvdA: Crosier-----	85	Fair: Low content of organic matter Carbonate content Too acid Water erosion	0.50 0.68 0.97 0.99	Poor: Depth to saturated zone Low strength Shrink-swell	0.00 0.00 0.99	Poor: Depth to saturated zone Hard to reclaim	0.00 0.99
CvdB: Crosier-----	80	Fair: Low content of organic matter Carbonate content Too acid Water erosion	0.50 0.68 0.97 0.99	Poor: Depth to saturated zone Low strength Shrink-swell	0.00 0.00 0.99	Poor: Depth to saturated zone Hard to reclaim	0.00 0.99

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CwkA: Crumstown-----	80	Fair: Too sandy Low content of organic matter Too acid	 0.01 0.88 0.95	Good		Fair: Too sandy	0.01
CwkB: Crumstown-----	80	Poor: Wind erosion Too sandy Low content of organic matter Too acid	 0.00 0.01 0.88 0.95	Good		Fair: Too sandy	0.01
DcrA: Del Rey-----	85	Poor: Too clayey Low content of organic matter Carbonate content Too acid Water erosion	 0.00 0.12 0.80 0.88 0.90	Poor: Depth to saturated zone Low strength Shrink-swell	 0.00 0.00 0.87	Poor: Depth to saturated zone Too clayey	 0.00 0.00
EchAN: Edwards, drained---	80	Poor: Wind erosion Carbonate content	 0.00 0.00	Poor: Depth to saturated zone	 0.00	Poor: Carbonate content Depth to saturated zone	 0.00 0.00
EchAU: Edwards, undrained--	75	Poor: Wind erosion Carbonate content	 0.00 0.00	Poor: Depth to saturated zone	 0.00	Poor: Depth to saturated zone Content of organic matter	 0.00 0.00
EcrAN: Edselton, drained---	70	Poor: Wind erosion Carbonate content	 0.00 0.00	Poor: Depth to saturated zone	 0.00	Poor: Carbonate content Depth to saturated zone	 0.00 0.00
EcrAU: Edselton, undrained-	70	Poor: Wind erosion Carbonate content	 0.00 0.00	Poor: Depth to saturated zone	 0.00	Poor: Depth to saturated zone Content of organic matter	 0.00 0.00
EmeA: Elston-----	85	Fair: Carbonate content Too acid Low content of organic matter	 0.32 0.74 0.88	Good		Good	
GczA: Gilford-----	75	Fair: Low content of organic matter	 0.12	Poor: Depth to saturated zone	 0.00	Poor: Depth to saturated zone	 0.00



Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GdnA: Gilford-----	75	Fair: Low content of organic matter	0.12	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone	0.00
HfbAN: Henrietta, drained--	80	Poor: Wind erosion Low content of organic matter Carbonate content	0.00 0.12 0.92	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Rock fragments	0.00 0.97
HfbAU: Henrietta, undrained	75	Poor: Wind erosion Low content of organic matter Carbonate content	0.00 0.12 0.92	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Rock fragments	0.00 0.97
HkkA: Hillsdale-----	80	Fair: Too acid Low content of organic matter	0.68 0.88	Good		Good	
HkkB: Hillsdale-----	80	Fair: Too acid Low content of organic matter	0.68 0.88	Good		Good	
HknC2: Hillsdale-----	55	Fair: Too acid Low content of organic matter	0.68 0.88	Good		Good	
Oshtemo-----	30	Fair: Carbonate content Low content of organic matter Too acid	0.32 0.88 0.97	Good		Good	
HknD2: Hillsdale-----	55	Fair: Too acid Low content of organic matter	0.68 0.88	Good		Fair: Slope	0.04
Oshtemo-----	30	Fair: Carbonate content Low content of organic matter Too acid	0.32 0.88 0.97	Good		Fair: Slope	0.04

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HkpC2: Hillsdale-----	55	Fair: Too acid Low content of organic matter	0.68 0.88	Good		Good	
Tracy-----	30	Fair: Too acid Low content of organic matter	0.20 0.88	Good		Fair: Too acid Rock fragments Hard to reclaim	0.76 0.94 0.99
HkpD2: Hillsdale-----	55	Fair: Too acid Low content of organic matter	0.68 0.88	Good		Fair: Slope	0.04
Tracy-----	30	Fair: Too acid Low content of organic matter	0.20 0.88	Good		Fair: Slope Too acid Rock fragments Hard to reclaim	0.04 0.76 0.94 0.99
HtbAN: Houghton, drained---	75	Not rated Wind erosion	0.00	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Content of organic matter	0.00 0.00
HtbAU: Houghton, undrained-	75	Not rated Wind erosion	0.00	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Content of organic matter	0.00 0.00
JaaAK: Jamestown-----	80	Fair: Carbonate content	0.68	Poor: Depth to saturated zone Low strength	0.00 0.00	Poor: Depth to saturated zone	0.00
MfaA: Martinsville-----	70	Fair: Carbonate content Too acid Low content of organic matter Water erosion	0.80 0.84 0.88 0.99	Fair: Low strength	0.22	Fair: Rock fragments	0.97
MfaB2: Martinsville-----	70	Fair: Carbonate content Too acid Low content of organic matter Water erosion	0.80 0.84 0.88 0.99	Fair: Low strength	0.22	Fair: Rock fragments	0.97

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MfaC2: Martinsville-----	80	Fair: Carbonate content Too acid Low content of organic matter Water erosion	0.80 0.84 0.88 0.99	Fair: Low strength	0.22	Fair: Rock fragments	0.97
MfrAN: Madaus, drained----	80	Poor: Wind erosion Carbonate content Droughty	0.00 0.00 0.10	Poor: Depth to saturated zone	0.00	Poor: Carbonate content Depth to saturated zone	0.00 0.00
MfrAU: Madaus, undrained---	75	Poor: Wind erosion Carbonate content Droughty	0.00 0.00 0.10	Poor: Depth to saturated zone	0.00	Poor: Carbonate content Depth to saturated zone	0.00 0.00
MgcA: Maumee-----	80	Poor: Wind erosion Too sandy Low content of organic matter Carbonate content	0.00 0.22 0.50 0.92	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Too sandy	0.00 0.22
MgdAN: Martisco, drained---	75	Poor: Wind erosion Carbonate content Droughty	0.00 0.00 0.76	Poor: Depth to saturated zone	0.00	Poor: Carbonate content Depth to saturated zone	0.00 0.00
MhaA: Maumee-----	80	Poor: Wind erosion Too sandy Low content of organic matter Carbonate content	0.00 0.22 0.50 0.92	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Too sandy	0.00 0.22
MhbA: Maumee-----	90	Poor: Wind erosion Too sandy Low content of organic matter Carbonate content	0.00 0.22 0.50 0.92	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Too sandy	0.00 0.22
MmbC2: Miami-----	80	Fair: Carbonate content Too acid Low content of organic matter Droughty Water erosion	0.46 0.74 0.88 0.92 0.99	Poor: Low strength Depth to saturated zone Shrink-swell	0.00 0.89 0.95	Fair: Depth to saturated zone Hard to reclaim	0.89 0.94

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MmdC3: Miami-----	80	Fair: Carbonate content Too acid Droughty Low content of organic matter Water erosion	0.46 0.74 0.87 0.88 0.99	Poor: Low strength Depth to saturated zone Shrink-swell	0.00 0.89 0.95	Fair: Hard to reclaim Depth to saturated zone	0.65 0.89
MmdD3: Miami-----	80	Fair: Carbonate content Too acid Droughty Low content of organic matter Water erosion	0.46 0.74 0.87 0.88 0.99	Poor: Low strength Depth to saturated zone Shrink-swell	0.00 0.89 0.95	Fair: Slope Hard to reclaim Depth to saturated zone	0.04 0.65 0.89
MouA: Milford-----	85	Poor: Too clayey Water erosion	0.00 0.90	Poor: Depth to saturated zone Low strength Shrink-swell	0.00 0.00 0.87	Poor: Depth to saturated zone Too clayey	0.00 0.00
MsaA: Mishawaka-----	95	Poor: Too sandy Low content of organic matter Too acid	0.00 0.12 0.74	Good		Poor: Hard to reclaim Too sandy Rock fragments	0.00 0.00 0.97
MtsB2: Morley-----	75	Poor: Carbonate content Too clayey Droughty Low content of organic matter Water erosion	0.00 0.08 0.22 0.88 0.90	Poor: Low strength Shrink-swell Depth to saturated zone	0.00 0.12 0.53	Poor: Hard to reclaim Too clayey Depth to saturated zone	0.00 0.06 0.53
MtsC2: Morley-----	80	Poor: Carbonate content Too clayey Droughty Low content of organic matter Water erosion	0.00 0.08 0.22 0.88 0.90	Poor: Low strength Shrink-swell Depth to saturated zone	0.00 0.12 0.53	Poor: Hard to reclaim Too clayey Depth to saturated zone Slope	0.00 0.06 0.53 0.96
MubD3: Morley-----	80	Poor: Carbonate content Droughty Too clayey Low content of organic matter	0.00 0.07 0.08 0.88	Poor: Low strength Shrink-swell Depth to saturated zone	0.00 0.12 0.53	Poor: Hard to reclaim Slope Too clayey Depth to saturated zone	0.00 0.00 0.06 0.53

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MvhAN: Moston, drained-----	80	Poor: Wind erosion Carbonate content	0.00 0.92	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Content of organic matter	0.00 0.00
MvhAU: Moston, undrained---	75	Poor: Wind erosion Carbonate content	0.00 0.92	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Content of organic matter	0.00 0.00
MvkA: Morocco-----	85	Poor: Too sandy Wind erosion Low content of organic matter Too acid	0.00 0.00 0.12 0.54	Poor: Depth to saturated zone	0.00	Poor: Too sandy Depth to saturated zone Too acid	0.00 0.00 0.98
MwzAN: Muskego, drained----	75	Poor: Wind erosion	0.00	Poor: Depth to saturated zone Low strength	0.00 0.22	Poor: Depth to saturated zone Content of organic matter	0.00 0.00
MwzAU: Muskego, undrained--	70	Poor: Wind erosion	0.00	Poor: Depth to saturated zone Low strength	0.00 0.22	Poor: Depth to saturated zone Content of organic matter	0.00 0.00
OkrA: Oshtemo-----	80	Fair: Carbonate content Low content of organic matter Too acid	0.32 0.88 0.97	Good		Good	
OkrB: Oshtemo-----	80	Poor: Wind erosion Carbonate content Low content of organic matter Too acid	0.00 0.32 0.88 0.97	Good		Good	
OkrC2: Oshtemo-----	80	Poor: Wind erosion Carbonate content Low content of organic matter Too acid	0.00 0.32 0.88 0.97	Good		Good	

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OkrD: Oshtemo-----	80	Poor: Wind erosion Carbonate content Low content of organic matter Too acid	0.00 0.32 0.88 0.97	Good		Fair: Slope	0.04
OlcA: Oshtemo-----	80	Fair: Carbonate content Low content of organic matter Too acid	0.32 0.88 0.97	Good		Good	
OlcB: Oshtemo-----	80	Fair: Carbonate content Low content of organic matter Too acid	0.32 0.88 0.97	Good		Good	
OlcC2: Oshtemo-----	80	Fair: Carbonate content Low content of organic matter Too acid	0.32 0.88 0.97	Good		Good	
OlcD: Oshtemo-----	80	Fair: Carbonate content Low content of organic matter Too acid	0.32 0.88 0.97	Good		Fair: Slope	0.04
OmgA: Osolo-----	85	Poor: Wind erosion Too sandy Low content of organic matter Too acid	0.00 0.04 0.12 0.97	Good		Fair: Too sandy	0.04
PaaAN: Palms, drained-----	80	Poor: Wind erosion Water erosion	0.00 0.99	Poor: Depth to saturated zone Low strength	0.00 0.22	Poor: Depth to saturated zone Content of organic matter	0.00 0.00
PaaAU: Palms, undrained----	75	Poor: Wind erosion Water erosion	0.00 0.99	Poor: Depth to saturated zone Low strength	0.00 0.22	Poor: Depth to saturated zone Content of organic matter	0.00 0.00
Pmg: Pits, gravel-----	100	Not rated		Not rated		Not rated	

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Px1A: Psammaquents-----	85	Not rated		Not rated		Not rated	
Pxo: Psamments-----	85	Not rated		Not rated		Not rated	
QuiA: Quinn-----	80	Fair: Too acid Low content of organic matter	0.32 0.88	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Too acid Rock fragments	0.00 0.88 0.94
QujA: Quinn-----	75	Fair: Too acid Low content of organic matter	0.32 0.88	Poor: Depth to saturated zone	0.00	Poor: Depth to saturated zone Too acid Rock fragments	0.00 0.88 0.94
RenA: Rensselaer-----	85	Fair: Carbonate content Low content of organic matter	0.46 0.88	Poor: Depth to saturated zone Shrink-swell	0.00 0.99	Poor: Depth to saturated zone Rock fragments	0.00 0.97
ReyA: Rensselaer-----	75	Fair: Carbonate content Low content of organic matter	0.46 0.88	Poor: Depth to saturated zone Shrink-swell	0.00 0.99	Poor: Depth to saturated zone Rock fragments	0.00 0.97
RopA: Riddles-----	50	Fair: Low content of organic matter Carbonate content Too acid Water erosion	0.12 0.46 0.88 0.99	Good		Poor: Hard to reclaim	0.00
Oshtemo-----	35	Fair: Carbonate content Low content of organic matter Too acid	0.32 0.88 0.97	Good		Good	
RopB: Riddles-----	50	Fair: Low content of organic matter Carbonate content Too acid Water erosion	0.12 0.46 0.88 0.99	Good		Poor: Hard to reclaim	0.00
Oshtemo-----	35	Poor: Wind erosion Carbonate content Low content of organic matter Too acid	0.00 0.32 0.88 0.97	Good		Good	

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material	Potential source of roadfill		Potential source of topsoil		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RopC2: Riddles-----	50	Fair: Low content of organic matter Carbonate content Too acid Water erosion	0.12 0.46 0.88 0.99	Good		Poor: Hard to reclaim	0.00
Oshtemo-----	35	Fair: Carbonate content Low content of organic matter Too acid	0.32 0.88 0.97	Good		Good	
RopD2: Riddles-----	50	Fair: Low content of organic matter Carbonate content Too acid Water erosion	0.12 0.46 0.88 0.99	Good		Poor: Hard to reclaim Slope	0.00 0.04
Oshtemo-----	35	Fair: Carbonate content Low content of organic matter Too acid	0.32 0.88 0.97	Good		Fair: Slope	0.04
RoqB: Riddles-----	55	Fair: Low content of organic matter Carbonate content Too acid Water erosion	0.12 0.46 0.88 0.99	Good		Poor: Hard to reclaim	0.00
Metea-----	30	Poor: Wind erosion Low content of organic matter Too sandy Too acid Carbonate content	0.00 0.12 0.14 0.84 0.92	Good		Fair: Too sandy	0.14
RoqC2: Riddles-----	55	Fair: Low content of organic matter Carbonate content Too acid Water erosion	0.12 0.46 0.88 0.99	Good		Poor: Hard to reclaim	0.00
Metea-----	30	Poor: Wind erosion Low content of organic matter Too sandy Too acid Carbonate content	0.00 0.12 0.14 0.84 0.92	Good		Fair: Too sandy	0.14



Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RoqD2: Riddles-----	50	Fair:  Low content of organic matter Carbonate content Too acid Water erosion	 0.12 0.46 0.88 0.99	Good		Poor:  Hard to reclaim Slope	 0.00 0.04
Metea-----	30	Poor:  Wind erosion Low content of organic matter Too sandy Too acid Carbonate content	 0.00 0.12 0.14 0.84 0.92	Good		Fair:  Slope Too sandy	 0.04 0.14
SdzA: Selfridge-----	50	Poor:  Wind erosion Carbonate content Too sandy Low content of organic matter Too acid	 0.00 0.46 0.56 0.88 0.97	Fair:  Depth to saturated zone	0.14	Fair:  Depth to saturated zone Too sandy	 0.14 0.56
Crosier-----	35	Fair:  Low content of organic matter Carbonate content Too acid Water erosion	 0.50 0.68 0.97 0.99	Poor:  Depth to saturated zone Low strength Shrink-swell	0.00 0.00 0.99	Poor:  Depth to saturated zone Hard to reclaim	 0.00 0.99
SdzaB: Selfridge-----	50	Poor:  Wind erosion Carbonate content Too sandy Low content of organic matter Too acid	 0.00 0.46 0.56 0.88 0.97	Fair:  Depth to saturated zone	0.14	Fair:  Depth to saturated zone Too sandy	 0.14 0.56
Brems-----	35	Poor:  Wind erosion Low content of organic matter Too sandy Too acid	 0.00 0.12 0.14 0.54	Fair:  Depth to saturated zone	0.89	Fair:  Too sandy Depth to saturated zone	 0.14 0.89
SesA: Schoolcraft-----	80	Fair:  Low content of organic matter Too acid	 0.12 0.68	Good		Good	
Sn1A: Southwest-----	75	Fair:  Water erosion	 0.99	Poor:  Depth to saturated zone Low strength Shrink-swell	0.00 0.00 0.99	Poor:  Depth to saturated zone	 0.00

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material	Potential source of roadfill		Potential source of topsoil		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TmpA: Tracy-----	80	Fair:  Too acid Low content of organic matter	 0.20 0.88	Good		Fair:  Too acid Rock fragments Hard to reclaim	 0.76 0.94 0.99
TmpB: Tracy-----	80	Fair:  Too acid Low content of organic matter	 0.20 0.88	Good		Fair:  Too acid Rock fragments Hard to reclaim	 0.76 0.94 0.99
TmpC2: Tracy-----	80	Fair:  Too acid Low content of organic matter	 0.20 0.88	Good		Fair:  Too acid Rock fragments Hard to reclaim	 0.76 0.94 0.99
TmpD: Tracy-----	80	Fair:  Too acid Low content of organic matter	 0.20 0.88	Good		Fair:  Slope Too acid Rock fragments Hard to reclaim	  0.04 0.76 0.94 0.99
TnwA: Troxel-----	80	Fair:  Too acid	 0.95	Fair:  Low strength	0.22	Good	
TxuA: Tyner-----	85	Poor:  Too sandy Wind erosion Low content of organic matter Too acid	 0.00 0.00 0.12 0.88	Good		Poor:  Too sandy	  0.00
TxuB: Tyner-----	85	Poor:  Too sandy Wind erosion Low content of organic matter Too acid	 0.00 0.00 0.12 0.88	Good		Poor:  Too sandy	  0.00
TxuC: Tyner-----	85	Poor:  Too sandy Wind erosion Low content of organic matter Too acid	 0.00 0.00 0.12 0.88	Good		Poor:  Too sandy	  0.00
TxuD: Tyner-----	85	Poor:  Too sandy Wind erosion Low content of organic matter Too acid	 0.00 0.00 0.12 0.88	Good		Poor:  Too sandy Slope	  0.00 0.04

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material	Potential source of roadfill	Potential source of topsoil			
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TxuF:							
Tyner-----	80	Poor:		Poor:		Poor:	
		Too sandy	0.00	Slope	0.00	Slope	0.00
		Wind erosion	0.00			Too sandy	0.00
		Low content of organic matter	0.12				
		Too acid	0.88				
Uam:							
Udorthents, loamy---	100	Not rated		Not rated		Not rated	
UdeA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Fair:		Good		Fair:	
		Low content of organic matter	0.50			Hard to reclaim	0.32
		Too acid	0.97			Rock fragments	0.88
UdeB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Fair:		Good		Fair:	
		Low content of organic matter	0.50			Hard to reclaim	0.32
		Too acid	0.97			Rock fragments	0.88
UdeC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Bainter-----	40	Fair:		Good		Fair:	
		Low content of organic matter	0.50			Hard to reclaim	0.32
		Too acid	0.97			Rock fragments	0.88
UdkA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brady-----	40	Poor:		Poor:		Poor:	
		Low content of organic matter	0.00	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Too acid	0.84			Rock fragments	0.50
		Carbonate content	0.97				
UdzA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Auten-----	40	Fair:		Poor:		Poor:	
		Droughty	0.24	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Low content of organic matter	0.50	Low strength	0.00		
		Too acid	0.95	Shrink-swell	0.87		

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material	Potential source of roadfill		Potential source of topsoil		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UeaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Crosier-----	40	Fair:		Poor:		Poor:	
		Low content of organic matter	0.50	Depth to saturated zone	0.00	Depth to saturated zone	0.00
		Carbonate content	0.68	Low strength	0.00	Hard to reclaim	0.99
		Too acid	0.97	Shrink-swell	0.99		
		Water erosion	0.99				
UeqA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Gilford-----	40	Fair:		Poor:		Poor:	
		Low content of organic matter	0.12	Depth to saturated zone	0.00	Depth to saturated zone	0.00
UewA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brems-----	25	Poor:		Fair:		Fair:	
		Wind erosion	0.00	Depth to	0.89	Too sandy	0.14
		Low content of organic matter	0.12	saturated zone		Depth to	0.89
		Too sandy	0.14			saturated zone	
		Too acid	0.54				
Morocco-----	15	Poor:		Poor:		Poor:	
		Too sandy	0.00	Depth to	0.00	Too sandy	0.00
		Wind erosion	0.00	saturated zone		Depth to	0.00
		Low content of organic matter	0.12			saturated zone	
		Too acid	0.54			Too acid	0.98
UfbA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Brookston-----	40	Fair:		Poor:		Poor:	
		Carbonate content	0.68	Depth to	0.00	Depth to	0.00
				saturated zone		saturated zone	
				Low strength	0.00		
				Shrink-swell	0.96		
UfhA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Poor:		Good		Poor:	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Low content of organic matter	0.12				
		Too acid	0.88				

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UfhB: Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Poor: Too sandy Wind erosion Low content of organic matter Too acid	0.00 0.00 0.12 0.88	Good		Poor: Too sandy	0.00
UfhC: Urban land-----	50	Not rated		Not rated		Not rated	
Coloma-----	40	Poor: Too sandy Wind erosion Low content of organic matter Too acid	0.00 0.00 0.12 0.88	Good		Poor: Too sandy	0.00
UfmA: Urban land-----	50	Not rated		Not rated		Not rated	
Coupee-----	40	Fair: Too acid Water erosion	0.54 0.99	Poor: Low strength	0.00	Good	
UfrA: Urban land-----	50	Not rated		Not rated		Not rated	
Del Rey-----	40	Poor: Too clayey Low content of organic matter Carbonate content Too acid Water erosion	0.00 0.12 0.80 0.88 0.90	Poor: Depth to saturated zone Low strength Shrink-swell	0.00 0.00 0.87	Poor: Depth to saturated zone Too clayey	0.00 0.00
UftA: Urban land-----	50	Not rated		Not rated		Not rated	
Elston-----	40	Fair: Carbonate content Too acid Low content of organic matter	0.32 0.74 0.88	Good		Good	
UfzA: Urban land-----	50	Not rated		Not rated		Not rated	
Mishawaka-----	45	Poor: Too sandy Low content of organic matter Too acid	0.00 0.12 0.74	Good		Poor: Hard to reclaim Too sandy Rock fragments	0.00 0.00 0.97

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material	Potential source of roadfill		Potential source of topsoil		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UgaA: Urban land-----	50	Not rated		Not rated		Not rated	
Morocco-----	40	Poor: Too sandy Wind erosion Low content of organic matter Too acid	0.00 0.00 0.12 0.54	Poor: Depth to saturated zone	0.00	Poor: Too sandy Depth to saturated zone Too acid	0.00 0.00 0.98
UglA: Urban land-----	50	Not rated		Not rated		Not rated	
Osolo-----	40	Poor: Wind erosion Too sandy Low content of organic matter Too acid	0.00 0.04 0.12 0.97	Good		Fair: Too sandy	0.04
UgrA: Urban land-----	50	Not rated		Not rated		Not rated	
Rensselaer-----	40	Fair: Carbonate content Low content of organic matter	0.46 0.88	Poor: Depth to saturated zone Shrink-swell	0.00 0.99	Poor: Depth to saturated zone Rock fragments	0.00 0.97
UgsA: Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Fair: Low content of organic matter Carbonate content Too acid Water erosion	0.12 0.46 0.88 0.99	Good		Poor: Hard to reclaim	0.00
Oshtemo-----	15	Fair: Carbonate content Low content of organic matter Too acid	0.32 0.88 0.97	Good		Good	
UgsB: Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Fair: Low content of organic matter Carbonate content Too acid Water erosion	0.12 0.46 0.88 0.99	Good		Poor: Hard to reclaim	0.00
Oshtemo-----	15	Poor: Wind erosion Carbonate content Low content of organic matter Too acid	0.00 0.32 0.88 0.97	Good		Good	

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UgvA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Poor:		Good		Poor:	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Low content of organic matter	0.12				
		Too acid	0.88				
UgvB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Poor:		Good		Poor:	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Low content of organic matter	0.12				
		Too acid	0.88				
UgvC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Poor:		Good		Poor:	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Low content of organic matter	0.12				
		Too acid	0.88				
UgvD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tyner-----	40	Poor:		Good		Poor:	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Slope	0.04
		Low content of organic matter	0.12				
		Too acid	0.88				
UhmA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Fair:		Good		Good	
		Too acid	0.68				
		Low content of organic matter	0.88				
UhmB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	40	Fair:		Good		Good	
		Too acid	0.68				
		Low content of organic matter	0.88				

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UhoC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Fair:		Good		Good	
		Too acid	0.68				
		Low content of organic matter	0.88				
Oshtemo-----	15	Fair:		Good		Good	
		Carbonate content	0.32				
		Low content of organic matter	0.88				
		Too acid	0.97				
UhoD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Fair:		Good		Fair:	
		Too acid	0.68			Slope	0.04
		Low content of organic matter	0.88				
Oshtemo-----	15	Fair:		Good		Fair:	
		Carbonate content	0.32			Slope	0.04
		Low content of organic matter	0.88				
		Too acid	0.97				
UhpC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Fair:		Good		Good	
		Too acid	0.68				
		Low content of organic matter	0.88				
Tracy-----	15	Fair:		Good		Fair:	
		Too acid	0.20			Too acid	0.76
		Low content of organic matter	0.88			Rock fragments	0.94
						Hard to reclaim	0.99
UhpD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Hillsdale-----	30	Fair:		Good		Fair:	
		Too acid	0.68			Slope	0.04
		Low content of organic matter	0.88				
Tracy-----	15	Fair:		Good		Fair:	
		Too acid	0.20			Slope	0.04
		Low content of organic matter	0.88			Too acid	0.76
						Rock fragments	0.94
						Hard to reclaim	0.99



Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UhWA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Fair:		Fair:		Fair:	
		Carbonate content	0.80	Low strength	0.22	Rock fragments	0.97
		Too acid	0.84				
		Low content of organic matter	0.88				
		Water erosion	0.99				
UhwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Fair:		Fair:		Fair:	
		Carbonate content	0.80	Low strength	0.22	Rock fragments	0.97
		Too acid	0.84				
		Low content of organic matter	0.88				
		Water erosion	0.99				
UhwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Martinsville-----	40	Fair:		Fair:		Fair:	
		Carbonate content	0.80	Low strength	0.22	Rock fragments	0.97
		Too acid	0.84				
		Low content of organic matter	0.88				
		Water erosion	0.99				
UkaA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Maumee-----	40	Poor:		Poor:		Poor:	
		Wind erosion	0.00	Depth to	0.00	Depth to	0.00
		Too sandy	0.22	saturated zone		saturated zone	
		Low content of organic matter	0.50			Too sandy	0.22
		Carbonate content	0.92				
UkeA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Milford-----	40	Poor:		Poor:		Poor:	
		Too clayey	0.00	Depth to	0.00	Depth to	0.00
		Water erosion	0.90	saturated zone		saturated zone	
				Low strength	0.00	Too clayey	0.00
				Shrink-swell	0.87		
UkxA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Fair:		Good		Good	
		Carbonate content	0.32				
		Low content of organic matter	0.88				
		Too acid	0.97				

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material	Potential source of roadfill		Potential source of topsoil		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UkxB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Fair:		Good		Good	
		Carbonate content	0.32				
		Low content of organic matter	0.88				
		Too acid	0.97				
UkxC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Oshtemo-----	40	Fair:		Good		Good	
		Carbonate content	0.32				
		Low content of organic matter	0.88				
		Too acid	0.97				
UmfB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Fair:		Good		Poor:	
		Low content of organic matter	0.12			Hard to reclaim	0.00
		Carbonate content	0.46				
		Too acid	0.88				
		Water erosion	0.99				
Metea-----	15	Poor:		Good		Fair:	
		Wind erosion	0.00			Too sandy	0.14
		Low content of organic matter	0.12				
		Too sandy	0.14				
		Too acid	0.84				
		Carbonate content	0.92				
UmfC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Fair:		Good		Poor:	
		Low content of organic matter	0.12			Hard to reclaim	0.00
		Carbonate content	0.46				
		Too acid	0.88				
		Water erosion	0.99				
Metea-----	15	Poor:		Good		Fair:	
		Wind erosion	0.00			Too sandy	0.14
		Low content of organic matter	0.12				
		Too sandy	0.14				
		Too acid	0.84				
		Carbonate content	0.92				

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UmfD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Riddles-----	25	Fair:		Good		Poor:	
		Low content of organic matter	0.12			Hard to reclaim	0.00
		Carbonate content	0.46			Slope	0.04
		Too acid	0.88				
		Water erosion	0.99				
Metea-----	15	Poor:		Good		Fair:	
		Wind erosion	0.00			Slope	0.04
		Low content of organic matter	0.12			Too sandy	0.14
		Too sandy	0.14				
		Too acid	0.84				
		Carbonate content	0.92				
UmpA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Schoolcraft-----	40	Fair:		Good		Good	
		Low content of organic matter	0.12				
		Too acid	0.68				
UmuA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Southwest-----	40	Fair:		Poor:		Poor:	
		Water erosion	0.99	Depth to saturated zone	0.00	Depth to saturated zone	0.00
				Low strength	0.00		
				Shrink-swell	0.99		
UmwA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Fair:		Good		Fair:	
		Too acid	0.20			Too acid	0.76
		Low content of organic matter	0.88			Rock fragments	0.94
						Hard to reclaim	0.99
UmwB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Fair:		Good		Fair:	
		Too acid	0.20			Too acid	0.76
		Low content of organic matter	0.88			Rock fragments	0.94
						Hard to reclaim	0.99
UmwC:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Fair:		Good		Fair:	
		Too acid	0.20			Too acid	0.76
		Low content of organic matter	0.88			Rock fragments	0.94
						Hard to reclaim	0.99

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UmwD:							
Urban land-----	50	Not rated		Not rated		Not rated	
Tracy-----	40	Fair:		Good		Fair:	
		Too acid	0.20			Slope	0.04
		Low content of organic matter	0.88			Too acid	0.76
						Rock fragments	0.94
						Hard to reclaim	0.99
UmxA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Troxel-----	40	Fair:		Fair:		Good	
		Too acid	0.95	Low strength	0.22		
UnoA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Whitaker-----	40	Fair:		Poor:		Poor:	
		Carbonate content	0.80	Depth to	0.00	Depth to	0.00
		Too acid	0.84	saturated zone		saturated zone	
		Low content of organic matter	0.88				
UnqB:							
Urban land-----	50	Not rated		Not rated		Not rated	
Williamstown-----	25	Fair:		Poor:		Fair:	
		Carbonate content	0.54	Low strength	0.00	Depth to	0.53
		Low content of organic matter	0.88	Depth to	0.53	saturated zone	
		Droughty	0.97	saturated zone		Hard to reclaim	0.84
		Too acid	0.97	Shrink-swell	0.95		
		Water erosion	0.99				
Crosier-----	15	Fair:		Poor:		Poor:	
		Low content of organic matter	0.50	Depth to	0.00	Depth to	0.00
		Carbonate content	0.68	saturated zone		saturated zone	
		Too acid	0.97	Low strength	0.00	Hard to reclaim	0.99
		Water erosion	0.99	Shrink-swell	0.99		
UntA:							
Urban land-----	50	Not rated		Not rated		Not rated	
Wunabuna, drained---	40	Fair:		Poor:		Poor:	
		Water erosion	0.99	Depth to	0.00	Depth to	0.00
				saturated zone		saturated zone	
Usl:							
Udorthents, rubbish-	100	Not rated		Not rated		Not rated	
W:							
Water-----	100	Not rated		Not rated		Not rated	
WcnAI:							
Waterford-----	80	Fair:		Poor:		Poor:	
		Low content of organic matter	0.88	Depth to	0.00	Depth to	0.00
		Water erosion	0.99	saturated zone		saturated zone	
						Hard to reclaim	0.32

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WoaA: Williamstown-----	85	Fair: Carbonate content Low content of organic matter Droughty Too acid Water erosion	 0.54 0.88  0.97 0.97 0.99	Poor: Low strength Depth to saturated zone Shrink-swell	 0.00 0.53  0.95	Fair: Depth to saturated zone Hard to reclaim	 0.53  0.84
WoaB2: Williamstown-----	85	Fair: Carbonate content Low content of organic matter Droughty Too acid Water erosion	 0.54 0.88  0.95 0.97 0.99	Poor: Low strength Depth to saturated zone Shrink-swell	 0.00 0.53  0.95	Fair: Depth to saturated zone Hard to reclaim	 0.53  0.84
WoaC2: Williamstown-----	80	Fair: Carbonate content Low content of organic matter Droughty Too acid Water erosion	 0.54 0.88  0.95 0.97 0.99	Poor: Low strength Depth to saturated zone Shrink-swell	 0.00 0.53  0.95	Fair: Depth to saturated zone Hard to reclaim	 0.53  0.84
WobB: Williamstown-----	50	Fair: Carbonate content Low content of organic matter Droughty Too acid Water erosion	 0.54 0.88  0.97 0.97 0.99	Poor: Low strength Depth to saturated zone Shrink-swell	 0.00 0.53  0.95	Fair: Depth to saturated zone Hard to reclaim	 0.53  0.84
Crosier-----	30	Fair: Low content of organic matter Carbonate content Too acid Water erosion	 0.50  0.68 0.97 0.99	Poor: Depth to saturated zone Low strength Shrink-swell	 0.00  0.00 0.99	Poor: Depth to saturated zone Hard to reclaim	 0.00  0.99
WrxAN: Wunabuna, drained---	85	Fair: Water erosion	 0.99	Poor: Depth to saturated zone	 0.00	Poor: Depth to saturated zone	 0.00
WtbA: Whitaker-----	75	Fair: Carbonate content Too acid Low content of organic matter	 0.80 0.84 0.88	Poor: Depth to saturated zone	 0.00	Poor: Depth to saturated zone	 0.00

Table 15b.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WujB: Williamstown-----	45	Fair:		Poor:		Fair:	
		Carbonate content	0.54	Low strength	0.00	Depth to	0.53
		Low content of organic matter	0.88	Depth to saturated zone	0.53	saturated zone	
		Droughty	0.97	Shrink-swell	0.95	Hard to reclaim	0.84
		Too acid	0.97				
		Water erosion	0.99				
Moon-----	40	Poor:		Fair:		Poor:	
		Too sandy	0.00	Depth to	0.76	Too sandy	0.00
		Wind erosion	0.00	saturated zone		Depth to	0.76
		Low content of organic matter	0.12			saturated zone	
		Too acid	0.88			Rock fragments	0.97
		Carbonate content	0.92				

Table 16.--Engineering Index Properties

(Absence of an entry indicates that the data were not estimated. The representative values for USDA texture and for Unified and AASHTO classifications are designated with an asterisk.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
<b>AahAK:</b>												
Abscota-----	0-5	Loamy sand*-----	SM*	A-2-4*	0	0	95-100	95-100	50-75	15-30	0-0	NP
	5-14	Loamy sand*, sand, loamy fine sand.	SM*	A-2-4*, A-1, A-3	0	0	95-100	85-100	45-65	5-30	0-0	NP
	14-60	Sand*, coarse sand, gravelly sand.	SM*, SP, SP-SM	A-2-4*, A-1, A-3	0	0	85-100	60-100	35-55	0-15	0-0	NP
<b>AatAN:</b>												
Ackerman, drained-----	0-8	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	8-14	Coprogenous material*.	OL*	A-5*	0	0	95-100	95-100	85-100	75-96	40-50	2-8
	14-80	Fine sand*, very fine sand, loamy sand.	SP-SM*, SM	A-2-4*	0	0	100	100	85-95	10-20	0-0	NP
<b>AbhAN:</b>												
Adrian, drained-	0-9	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	9-34	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	34-80	Sand*, fine sand, gravelly loamy sand.	SP*, SM	A-2*, A-1, A-3	0	0	80-100	60-100	30-80	0-35	0-0	NP
<b>AbhAU:</b>												
Adrian, undrained-----	0-34	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	34-80	Sand*, fine sand, gravelly loamy sand.	SP*, SM	A-2*, A-1, A-3	0	0	80-100	60-100	30-80	0-35	0-0	NP
<b>ApuAN:</b>												
Antung, drained-	0-9	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	9-12	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	12-80	Coarse sand*, sand, fine sand, gravelly loamy sand.	SP*, SM	A-1*, A-2, A-3	0	0	80-100	60-100	30-80	0-35	0-14	NP
<b>AxvA:</b>												
Auten-----	0-9	Loam*-----	CL*, ML, CL-ML	A-4*, A-6	0	0	95-100	90-100	85-95	55-70	15-40	NP-15
	9-22	Clay loam*, loam, sandy clay loam.	CL*, SC	A-6*, A-7-6	0-1	0-1	95-100	90-100	75-95	45-80	25-50	12-30
	22-80	Stratified loamy sand to sand*.	SM*, SP, SP-SM	A-3*, A-2-4	0-1	0-3	80-100	55-98	40-80	0-20	0-0	NP

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	sieve number--					
							4	10	40	200		
	In				Pct	Pct					Pct	
BaaA: Bainter-----	0-9	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	9-13	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	13-31	Sandy loam*, coarse sandy loam.	SM*, SC, SC-SM	A-4*, A-2-4	0	0	80-100	75-95	30-80	15-40	14-27	NP-13
	31-44	Coarse sandy loam*, sandy loam, sandy clay loam, gravelly coarse sandy loam.	SM*, GM, SC, SC-SM	A-4*, A-2-4	0	0-5	55-95	50-90	25-80	15-50	14-40	NP-18
	44-54	Sandy clay loam*	CL*, CL-ML, SC, SC-SM	A-6*, A-2-4, A-2-6, A-4	0	0	60-98	50-90	30-85	15-65	20-60	5-30
	54-80	Coarse sand*, sand, gravelly coarse sand.	SW-SM*, GP, SP-SM, SW	A-1-a*, A-1-B	0	0-5	45-90	35-90	15-40	0-10	0-0	NP
BaaB: Bainter-----	0-9	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	9-13	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	13-31	Sandy loam*, coarse sandy loam.	SM*, SC, SC-SM	A-4*, A-2-4	0	0	80-100	75-95	30-80	15-40	14-27	NP-13
	31-44	Coarse sandy loam*, sandy loam, sandy clay loam, gravelly coarse sandy loam.	SM*, GM, SC, SC-SM	A-4*, A-2-4	0	0-5	55-95	50-90	25-80	15-50	14-40	NP-18
	44-54	Sandy clay loam*	CL*, CL-ML, SC, SC-SM	A-6*, A-2-4, A-2-6, A-4	0	0	60-98	50-90	30-85	15-65	20-60	5-30
	54-80	Coarse sand*, sand, gravelly coarse sand.	SW-SM*, GP, SP-SM, SW	A-1-a*, A-1-B	0	0-5	45-90	35-90	15-40	0-10	0-0	NP
BaaC2: Bainter-----	0-5	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	5-13	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	13-31	Sandy loam*, coarse sandy loam.	SM*, SC, SC-SM	A-4*, A-2-4	0	0	80-100	75-95	30-80	15-40	14-27	NP-13
	31-44	Coarse sandy loam*, sandy loam, sandy clay loam, gravelly coarse sandy loam.	SM*, GM, SC, SC-SM	A-4*, A-2-4	0	0	55-95	50-90	25-80	15-50	14-40	NP-18
	44-54	Sandy clay loam*	CL*, CL-ML, SC, SC-SM	A-6*, A-2-4, A-2-6, A-4	0	0	60-98	50-90	30-85	15-65	20-60	5-30
	54-80	Coarse sand*, sand, gravelly coarse sand.	SW-SM*, GP, SP-SM, SW	A-1-a*, A-1-B	0	0-5	45-90	35-85	15-40	0-10	0-0	NP



Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches						
							4	10	40	200		
	In				Pct	Pct					Pct	
BbmA:												
Baugo-----	0-11	Silt loam*-----	CL*, ML	A-6*, A-4	0	0	100	95-100	90-100	75-90	23-40	NP-17
	11-29	Silty clay loam*, clay loam.	CL*, CL-ML	A-6*, A-4, A-7-6	0	0	95-100	90-100	80-100	55-90	23-50	4-31
	29-36	Silt loam*, loam, sandy loam.	CL*, ML, SC, SM	A-6*, A-2-4, A-2-6, A-4	0	0	95-100	90-100	75-100	25-100	14-40	NP-18
	36-56	Sand*, loamy sand, gravelly sand.	SM*, SP, SP-SM	A-2-4*, A-1-B, A-3	0	0-5	85-100	70-100	30-85	0-25	0-0	NP
	56-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15
BmgA:												
Blount-----	0-7	Silt loam*-----	CL*	A-6*, A-4	0	0	95-100	95-100	90-100	80-95	25-40	8-20
	7-23	Clay loam*, silty clay loam, silty clay.	CH*, CL	A-7*, A-6	0-1	0-5	95-100	90-100	80-90	75-85	35-60	5-35
	23-42	Clay loam*, silty clay loam.	CL*, CH, MH, ML	A-6*, A-7	0-1	0-5	95-100	90-100	80-90	70-90	35-55	10-30
	42-80	Clay loam*, silty clay loam.	CL*	A-6*, A-7	0-1	0-10	90-100	90-100	80-100	70-90	30-45	10-25
BshA:												
Brady-----	0-9	Sandy loam*-----	SM*, CL-ML, ML, SC-SM	A-4*, A-1, A-2	0	0-5	95-100	75-100	45-85	20-55	0-25	NP-7
	9-37	Sandy loam*, sandy clay loam, gravelly sandy loam.	SM*, CL, ML, SC	A-4*, A-6, A-1, A-2	0	0-5	85-100	60-100	35-90	20-55	15-35	NP-15
	37-56	Loamy sand*, sandy loam.	SM*, SC, SC-SM, SP-SM	A-2-4*, A-1, A-2, A-4	0	0-5	95-100	75-100	35-70	10-40	0-30	NP-10
	56-80	Gravelly sand*, coarse sand, gravel.	SP-SM*, GP, GP-GM, SP	A-1*, A-2-4, A-3	0	0-5	40-95	30-85	20-60	0-10	0-0	NP
BsxA:												
Brems-----	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	85-100	60-100	10-35	0-0	NP
	9-27	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	85-100	60-100	10-35	0-0	NP
	27-72	Sand*, fine sand, loamy sand.	SP*, SP-SM, SM	A-2-4*, A-3	0	0	100	85-100	55-95	0-25	0-0	NP
	72-80	Sand*, fine sand, loamy sand.	SP*, SP-SM, SM	A-2-4*, A-3	0	0	100	85-100	55-95	0-25	0-0	NP
Morocco-----	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	98-100	75-95	10-25	0-0	NP
	9-60	Sand*, fine sand, loamy fine sand, loamy sand.	SP-SM*, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
	60-80	Sand*, fine sand.	SP-SM*, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
BteA:												
Brems-----	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	85-100	60-100	10-35	0-0	NP
	9-27	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	85-100	60-100	10-35	0-0	NP
	27-72	Sand*, fine sand, loamy sand.	SP*, SP-SM, SM	A-2-4*, A-3	0	0	100	85-100	55-95	0-25	0-0	NP
	72-80	Sand*, fine sand, loamy sand.	SP*, SP-SM, SM	A-2-4*, A-3	0	0	100	85-100	55-95	0-25	0-0	NP

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
BuuA:												
Brookston-----	0-9	Loam*-----	CL*, CL-ML, ML	A-4*, A-6	0	0	95-100	90-100	85-95	55-75	20-40	NP-17
	9-48	Clay loam*, silty clay loam, loam.	CL*	A-6*, A-7-6	0	0	98-100	85-100	75-100	55-90	25-50	12-33
	48-68	Loam*, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-95	40-70	15-40	NP-22
	68-80	Loam*, fine sandy loam.	CL-ML*, SM, ML, CL, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15
CmbAI:												
Cohoctah-----	0-13	Loam*-----	CL*, CL-ML	A-4*	0	0	100	100	85-100	25-80	20-40	5-25
	13-56	Fine sandy loam*, loam, sandy loam.	SC-SM*, SC, CL-ML, CL	A-2-4*, A-4	0	0	100	100	85-100	25-80	10-40	NP-25
	56-80	Sand*, coarse sand, loamy sand.	SP*, SP-SM, SM	A-2*, A-3, A-2-4	0	0	85-100	75-98	35-85	0-25	0-0	NP
CnbA:												
Coloma-----	0-12	Sand*-----	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-70	2-15	0-14	NP
	12-47	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-75	2-30	0-14	NP
	47-80	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3, A-4	0	0-5	75-100	75-100	50-100	2-40	0-14	NP
CnbB:												
Coloma-----	0-12	Sand*-----	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-70	2-15	0-14	NP
	12-47	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-75	2-30	0-14	NP
	47-80	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3, A-4	0	0-5	75-100	75-100	50-100	2-40	0-14	NP
CnbC:												
Coloma-----	0-12	Sand*-----	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-70	2-15	0-14	NP
	12-47	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-75	2-30	0-14	NP
	47-80	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3, A-4	0	0-5	75-100	75-100	50-100	2-40	0-14	NP
CnbD:												
Coloma-----	0-12	Sand*-----	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-70	2-15	0-14	NP
	12-47	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-75	2-30	0-14	NP
	47-80	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3, A-4	0	0-5	75-100	75-100	50-100	2-40	0-14	NP
CrrA:												
Coupee-----	0-21	Silt loam*-----	CL*, ML	A-6*, A-4	0	0	100	100	95-100	75-100	26-39	2-15
	21-33	Clay loam*, loam	CL*, CL-ML	A-6*, A-7	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	33-52	Stratified loamy sand to sand to coarse sand*.	SM*, SP-SM	A-3*, A-2-4	0	0-1	85-100	75-98	35-85	0-25	0-0	NP
	52-98	Very channery coarse sand*, fine sand, sand.	SW-SM*, SW	A-1-a*	0-2	0-5	45-100	25-98	10-85	0-15	0-0	NP

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
CvdA: Crosier-----												
	0-11	Loam*-----	CL-ML*, CL, ML	A-4*, A-6	0-1	0-1	95-100	90-100	85-95	55-90	20-40	NP-17
	11-30	Clay loam*, loam, sandy clay loam.	CL*, SC	A-6*, A-7-6	0-1	0-1	95-100	90-100	75-95	45-80	25-50	12-30
	30-38	Loam*, sandy loam, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-95	40-70	15-40	NP-22
	38-80	Loam*, sandy loam, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15
CvdB: Crosier-----												
	0-11	Loam*	CL-ML*, CL, ML	A-4*, A-6	0-1	0-1	95-100	90-100	85-95	55-90	20-40	NP-17
	11-30	Clay loam*, loam, sandy clay loam.	CL*, SC	A-6*, A-7-6	0-1	0-1	95-100	90-100	75-95	45-80	25-50	12-30
	30-38	Loam*, sandy loam, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-95	40-70	15-40	NP-22
	38-80	Loam*, sandy loam, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15
CwkA: Crumstown-----												
	0-9	Fine sandy loam*	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	9-19	Fine sandy loam*, sandy loam, gravelly sandy loam.	SC-SM*, SC, SM	A-2-4*, A-4	0	0-5	80-100	75-98	55-85	25-55	0-30	NP-10
	19-45	Loamy sand*, fine sand, sand.	SP-SM*, SM, SW-SM	A-2-4*, A-3	0	0	90-100	85-100	55-85	0-25	0-0	NP
	45-100	Fine sand*, sand, loamy fine sand, loamy sand.	SP-SM*, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
CwkB: Crumstown-----												
	0-9	Fine sandy loam*	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	9-19	Fine sandy loam*, sandy loam, gravelly sandy loam.	SC-SM*, SC, SM	A-2-4*, A-4	0	0-5	80-100	75-98	55-85	25-55	0-30	NP-10
	19-45	Loamy sand*, fine sand, sand.	SP-SM*, SM, SW-SM	A-2-4*, A-3	0	0	90-100	85-100	55-85	0-25	0-0	NP
	45-100	Fine sand*, sand, loamy fine sand, loamy sand.	SP-SM*, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
DcrA: Del Rey-----												
	0-9	Silty clay loam*	CL*	A-6*, A-7	0	0	95-100	95-100	90-100	70-95	30-45	10-25
	9-33	Silty clay*, silty clay loam.	CH*, CL	A-7*	0	0	95-100	95-100	90-100	85-95	40-55	20-30
	33-90	Silty clay loam*, silt loam.	CL*	A-6*, A-7	0	0	95-100	95-100	90-100	70-95	30-45	10-25
EchAN: Edwards, drained												
	0-9	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	9-24	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	24-80	Marly material*	ML*	A-5*	0	0	100	100	90-99	70-95	---	---

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
EchAU: Edwards, undrained-----	0-24	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	24-80	Marly material*	ML*	A-5*	0	0	100	100	90-99	70-95	---	---
EcrAN: Edselton, drained-----	0-10	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	10-21	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	21-48	Marly material*	ML*	A-5*	0	0	100	100	90-99	70-95	---	---
	48-80	Sand*, fine sand, gravelly loamy sand.	SP*, SM, PT	A-2*, A-8, A-3, A-1	0	0	80-100	60-100	30-80	0-35	0-0	NP
EcrAU: Edselton, undrained-----	0-21	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	21-48	Marly material*	ML*	A-5*	0	0	100	100	90-99	70-95	---	---
	48-80	Sand*, fine sand, gravelly loamy sand.	SP*, SM, PT	A-2*, A-8, A-3, A-1	0	0	80-100	60-100	30-80	0-35	0-0	NP
EmeA: Elston-----	0-20	Sandy loam*-----	SC-SM*, SM	A-2-4*, A-4	0	0	85-100	85-100	60-80	25-40	0-25	NP-10
	20-34	Sandy loam*-----	SC-SM*, SM	A-4*, A-2-4	0	0-1	85-100	85-100	60-80	25-40	10-60	NP-20
	34-72	Loamy sand*, sandy loam.	SM*, SP-SM	A-2-4*, A-1, A-2	0-1	0-3	85-100	85-100	45-85	10-40	0-30	NP-10
	72-80	Sand*, gravelly sand.	SP-SM*, SM	A-2-4*, A-1-B, A-3	0-1	0-3	65-100	50-98	15-80	0-15	0-0	NP
GczA: Gilford-----	0-14	Sandy loam*-----	SC-SM*, SC, SM	A-2-4*, A-4	0	0	95-100	95-100	55-85	25-45	15-25	NP-10
	14-32	Sandy loam*, fine sandy loam.	SC-SM*, SC, SM	A-2-4*	0	0	95-100	95-100	55-90	25-50	15-30	NP-10
	32-38	Loamy sand*, sand, loamy fine sand.	SM*, SP, SP-SM	A-2-4*, A-1-B, A-3	0	0	95-100	95-100	40-95	0-25	0-0	NP
	38-80	Sand*, coarse sand, loamy sand.	SM*, SP, SP-SM	A-2-4*, A-1-B, A-3	0	0	85-100	85-100	35-85	0-25	0-0	NP
GdnA: Gilford-----	0-14	Sandy loam*-----	SC-SM*, SC, SM	A-2-4*, A-4	0	0	95-100	95-100	55-85	25-45	10-25	2-10
	14-32	Sandy loam*, fine sandy loam.	SC-SM*, SC, SM	A-2-4*	0	0	95-100	95-100	55-90	25-50	15-30	NP-10
	32-38	Loamy sand*, sand, loamy fine sand.	SM*, SP, SP-SM	A-2-4*, A-1-B, A-3	0	0	95-100	95-100	40-95	0-25	0-0	NP
	38-80	Sand*, coarse sand, loamy sand.	SM*, SP, SP-SM	A-2-4*, A-1-B, A-3	0	0	85-100	85-100	35-85	0-25	0-0	NP
HfbAN: Henrietta, drained-----	0-12	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	12-43	Stratified loamy fine sand to silt loam*.	SC*, CL, ML, SM	A-4*, A-2-4	0	0	95-100	75-100	70-100	30-85	15-25	2-10
	43-60	Stratified loamy fine sand to silt loam*.	SC*, CL, ML, SM	A-4*, A-2-4	0	0	95-100	75-100	70-100	30-85	15-25	2-10

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
HfbAU: Henrietta, undrained-----	0-12	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	12-43	Stratified loamy fine sand to silt loam*.	SC*, CL, ML, SM	A-4*, A-2-4	0	0	95-100	75-100	70-100	30-85	15-25	2-10
	43-80	Stratified loamy fine sand to silt loam*.	SC*, CL, ML, SM	A-4*, A-2-4	0	0	95-100	75-100	70-100	30-85	15-25	2-10
HkkA: Hillsdale-----	0-8	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	8-14	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	14-44	Sandy loam*-----	SC-SM*, SC	A-4*, A-2-4	0	0	95-100	90-100	75-95	25-40	15-50	NP-30
	44-84	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10
HkkB: Hillsdale-----	0-8	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	8-14	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	14-44	Sandy loam*-----	SC-SM*, SC	A-4*, A-2-4	0	0	95-100	90-100	75-95	25-40	15-50	NP-30
	44-84	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10
HknC2: Hillsdale-----	0-5	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	5-14	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	14-44	Sandy loam*-----	SC-SM*, SC	A-4*, A-2-4	0	0	95-100	90-100	75-95	25-40	15-50	NP-30
	44-84	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10
Oshtemo-----	0-6	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	6-14	Sandy loam*, loamy sand, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
HknD2: Hillsdale-----	0-5	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	5-14	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	14-44	Sandy loam*-----	SC-SM*, SC	A-4*, A-2-4	0	0	95-100	90-100	75-95	25-40	15-50	NP-30
	44-84	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10
Oshtemo-----	0-6	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	6-14	Sandy loam*, loamy sand, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
Hkpc2: Hillsdale-----	0-5	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	5-14	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	14-44	Sandy loam*-----	SC-SM*, SC	A-4*, A-2-4	0	0	95-100	90-100	75-95	25-40	15-50	NP-30
	44-84	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10
Tracy-----	0-5	Sandy loam*-----	SC-SM*, SM, SC	A-2-4*, A-4	0	0	80-100	75-98	60-80	25-40	0-25	NP-10
	5-47	Sandy loam*, loam.	SC-SM*, CL, ML, SM	A-4*, A-6	0	0	85-100	75-98	55-90	25-60	10-40	NP-20
	47-60	Gravelly sandy clay loam*, gravelly loamy sand.	SC*, SC-SM, SM, SP-SM	A-6*, A-4, A-2-4	0	0-1	60-90	50-75	30-70	10-60	0-40	NP-20
	60-86	Stratified loamy sand to gravelly sand*.	SM*, SP-SM	A-3*, A-1-B, A-2-4	0-1	0-3	65-100	50-98	15-85	0-25	0-0	NP
Hkpd2: Hillsdale-----	0-5	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	5-14	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	14-44	Sandy loam*-----	SC-SM*, SC	A-4*, A-2-4	0	0	95-100	90-100	75-95	25-40	15-50	NP-30
	44-84	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
HkpD2: Tracy-----	0-5	Sandy loam*-----	SC-SM*, SM, SC	A-2-4*, A-4	0	0	80-100	75-98	60-80	25-40	0-25	NP-10
	5-47	Sandy loam*, loam.	SC-SM*, CL, ML, SM	A-4*, A-6	0	0	85-100	75-98	55-90	25-60	10-40	NP-20
	47-60	Gravelly sandy clay loam*, gravelly loamy sand.	SC*, SC-SM, SM, SP-SM	A-6*, A-4, A-2-4	0	0-1	60-90	50-75	30-70	10-60	0-40	NP-20
	60-86	Stratified loamy sand to gravelly sand*.	SM*, SP-SM	A-3*, A-1-B, A-2-4	0-1	0-3	65-100	50-98	15-85	0-25	0-0	NP
HtbAN: Houghton, drained-----	0-9	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	9-80	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
HtbAU: Houghton, undrained-----	0-80	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
JaaAK: Jamestown-----	0-11	Silt loam*-----	CL*, ML	A-4*, A-6	0	0	100	100	95-100	75-100	26-39	2-15
	11-33	Loam*, silt loam, silty clay loam.	CL-ML*, CL, ML	A-4*, A-6, A-7-6	0	0	100	100	90-100	55-100	22-46	NP-24
	33-44	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*, A-4	0	0	90-100	85-100	60-100	25-45	17-27	NP-10
	44-52	Loamy sand*, sand, fine sandy loam.	SM*, SP-SM	A-2-4*, A-3, A-4	0	0	90-100	85-100	55-100	5-45	0-0	NP
	52-80	Loam*, fine sandy loam.	ML*, CL, CL-ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15
MfaA: Martinsville----	0-13	Loam*-----	CL*, CL-ML	A-4*	0	0	90-100	90-98	75-85	50-65	20-40	5-20
	13-35	Clay loam*, sandy clay loam.	CL-ML*, CL, SC	A-6*, A-4	0	0	85-100	75-100	60-95	40-75	20-60	5-30
	35-53	Sandy clay loam*, sandy loam, loam.	CL-ML*, CL, SC, SC-SM	A-6*, A-4	0	0-1	85-100	75-100	60-95	40-60	10-60	NP-20
	53-60	Stratified sandy loam to loam to silt loam*.	CL*, CL-ML, SM, SP-SM	A-4*, A-2-4	0-1	0-3	90-100	85-100	55-100	0-100	0-40	NP-15
MfaB2: Martinsville----	0-5	Loam*-----	CL*, CL-ML	A-4*	0	0	90-100	90-98	75-85	50-65	20-40	5-20
	5-35	Clay loam*, sandy clay loam.	CL-ML*, CL, SC	A-6*, A-4	0	0	85-100	75-100	60-95	40-75	20-60	5-30
	35-53	Sandy clay loam*, sandy loam, loam.	CL-ML*, CL, SC, SC-SM	A-6*, A-4	0	0-1	85-100	75-100	60-95	40-60	10-60	NP-20
	53-60	Stratified sandy loam to loam to silt loam*.	CL*, CL-ML, SM, SP-SM	A-4*, A-2-4	0-1	0-3	90-100	85-100	55-100	0-100	0-40	NP-15

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
<b>MfaC2:</b>												
<b>Martinsville----</b>	0-5	Loam*-----	CL*, CL-ML	A-4*	0	0	90-100	90-98	75-85	50-65	20-40	5-20
	5-35	Clay loam*, sandy clay loam.	CL-ML*, CL, SC	A-6*, A-4	0	0	85-100	75-100	60-95	40-75	20-60	5-30
	35-53	Sandy clay loam*, sandy loam, loam.	CL-ML*, CL, SC, SC-SM	A-6*, A-4	0	0-1	85-100	75-100	60-95	40-60	10-60	NP-20
	53-60	Stratified sandy loam to loam to silt loam*.	CL*, CL-ML, SM, SP-SM	A-4*, A-2-4	0-1	0-3	90-100	85-100	55-100	0-100	0-40	NP-15
<b>MfrAN:</b>												
<b>Madaus, drained----</b>	0-9	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	9-48	Marly material*	ML*	A-5*	0	0	100	100	90-99	70-95	---	---
	48-80	Sand*, fine sand, loamy sand.	SP-SM*, SP, SM	A-2-4*, A-3	0	0	95-100	80-100	50-90	3-20	0-0	NP
<b>MfrAU:</b>												
<b>Madaus, undrained-----</b>	0-9	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	9-48	Marly material*	ML*	A-5*	0	0	100	100	90-99	70-95	---	---
	48-80	Sand*, fine sand, loamy sand.	SP-SM*, SP, SM	A-2-4*, A-3	0	0	95-100	80-100	50-90	3-20	0-0	NP
<b>MgcA:</b>												
<b>Maumee-----</b>	0-23	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	95-100	90-100	60-95	10-25	0-0	NP
	23-61	Sand*, loamy fine sand, fine sand.	SP*, SP-SM, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
	61-80	Sand*, coarse sand, fine sand.	SP*, SP-SM	A-2*, A-3, A-2-4	0	0	100	95-100	40-70	0-25	0-0	NP
<b>MgdAN:</b>												
<b>Martisco, drained-----</b>	0-12	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	12-80	Marly material*	ML*	A-5*	0	0	100	100	90-99	70-95	---	---
<b>MhaA:</b>												
<b>Maumee-----</b>	0-23	Loamy fine sand*	SM*	A-2-4*	0	0	100	100	90-100	20-35	0-0	NP
	23-61	Fine sand*, sand, loamy fine sand.	SP*, SP-SM, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
	61-80	Sand*, fine sand, coarse sand.	SP*, SP-SM	A-2*, A-3, A-2-4	0	0	100	95-100	40-70	0-25	0-0	NP
<b>MhbA:</b>												
<b>Maumee-----</b>	0-23	Loamy fine sand*	SM*	A-2-4*	0	0	100	100	90-100	20-35	0-0	NP
	23-61	Fine sand*, sand, loamy fine sand.	SP*, SP-SM, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
	61-80	Sand*, fine sand, coarse sand.	SP*, SP-SM	A-2*, A-3, A-2-4	0	0	100	95-100	40-70	0-25	0-0	NP
<b>MmbC2:</b>												
<b>Miami-----</b>	0-5	Loam*-----	CL-ML*, CL, ML	A-4*, A-6	0	0	95-100	90-100	80-95	60-85	20-37	NP-17
	5-31	Clay loam*, loam	CL*, CL-ML	A-6*, A-7	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	31-36	Loam*, fine sandy loam.	CL*, ML, SC, SM	A-6*, A-4	0-1	0-3	90-98	85-98	65-95	40-70	15-37	NP-22
	36-80	Loam*, fine sandy loam.	CL-ML*, CL, SC, SC-SM	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15



Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
<b>MmdC3:</b>												
Miami-----	0-4	Clay loam*-----	CL*, CL-ML	A-6*, A-7-6	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	4-31	Clay loam*, loam	CL*, CL-ML	A-6*, A-7	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	31-36	Loam*, fine sandy loam.	CL*, ML, SC, SM	A-6*, A-4	0-1	0-3	90-98	85-98	65-95	40-70	15-37	NP-22
	36-80	Loam*, fine sandy loam.	CL-ML*, CL, SC, SC-SM	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
<b>MmdD3:</b>												
Miami-----	0-4	Clay loam*-----	CL*, CL-ML	A-6*, A-7-6	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	4-31	Clay loam*, loam	CL*, CL-ML	A-6*, A-7	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	31-36	Loam*, fine sandy loam.	CL*, ML, SC, SM	A-6*, A-4	0-1	0-3	90-98	85-98	65-95	40-70	15-37	NP-22
	36-80	Loam*, fine sandy loam.	CL-ML*, CL, SC, SC-SM	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
<b>MouA:</b>												
Milford-----	0-18	Silty clay loam*	CL*, CL-ML	A-6*, A-4	0	0	100	95-100	90-100	70-90	25-40	5-20
	18-50	Silty clay*, silty clay loam, clay loam.	CH*, CL	A-7*	0	0	100	95-100	90-100	75-100	40-60	20-40
	50-60	Stratified silt loam to silty clay loam to silty clay*.	CL*, SC	A-7*, A-6	0	0	95-100	95-100	90-100	45-100	25-50	10-30
<b>MsaA:</b>												
Mishawaka-----	0-12	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*, A-4	0	0	80-100	75-100	60-90	25-40	15-25	NP-10
	12-18	Sandy loam*-----	SC-SM*, SC, SM	A-2-4*, A-4	0	0	80-100	75-100	60-90	25-40	15-25	NP-10
	18-25	Gravelly loamy sand*, loamy sand, sandy loam.	SM*, GM, SC, SC-SM	A-2-4*, A-1-B	0	0	55-100	50-100	40-85	10-25	0-25	NP-10
	25-58	Sand*, fine sand	SP-SM*, SM	A-2-4*, A-1-B, A-3	0	0	80-100	75-100	30-80	5-35	0-0	NP
	58-80	Sand*, coarse sand.	SP-SM*, SM	A-2-4*, A-1-B, A-3	0	0	80-100	75-100	30-70	0-15	0-0	NP
<b>MtsB2:</b>												
Morley-----	0-5	Silt loam*-----	CL*, CL-ML	A-6*, A-4	0	0	100	100	90-100	75-90	25-40	5-15
	5-20	Silty clay loam*, clay loam, silty clay.	CL*, CH	A-7-6*	0	0	98-100	95-100	85-100	75-90	40-60	15-35
	20-29	Clay loam*, silty clay, silty clay loam.	CL*, CH	A-6*, A-7-6	0	0-1	98-100	95-100	85-100	70-90	30-60	10-35
	29-80	Clay loam*, silty clay loam.	CL*	A-6*, A-7	0-1	0-3	95-100	95-100	85-95	70-85	25-45	10-25
<b>MtsC2:</b>												
Morley-----	0-5	Silt loam*-----	CL*, CL-ML	A-6*, A-4	0	0	100	100	90-100	75-90	25-40	5-15
	5-20	Silty clay loam*, clay loam, silty clay.	CL*, CH	A-7-6*	0	0	98-100	95-100	85-100	75-90	40-60	15-35
	20-29	Clay loam*, silty clay, silty clay loam.	CL*, CH	A-6*, A-7-6	0	0-1	98-100	95-100	85-100	70-90	30-60	10-35
	29-80	Clay loam*, silty clay loam.	CL*	A-6*, A-7	0-1	0-3	95-100	95-100	85-95	70-85	25-45	10-25

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
MubD3:												
Morley-----	0-4	Silty clay loam*	CL*, CH	A-7-6*	0	0	98-100	95-100	85-100	75-90	40-60	15-35
	4-20	Silty clay loam*, clay loam, silty clay.	CL*, CH	A-7-6*	0	0	98-100	95-100	85-100	75-90	40-60	15-35
	20-29	Clay loam*, silty clay, silty clay loam.	CL*, CH	A-6*, A-7-6	0	0-1	98-100	95-100	85-100	70-90	30-60	10-35
	29-80	Clay loam*, silty clay loam.	CL*	A-6*, A-7	0-1	0-3	95-100	95-100	85-95	70-85	25-45	10-25
MvhAN:												
Moston, drained-	0-8	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	8-24	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	24-48	Coprogenous material*.	OL*	A-5*	0	0	95-100	95-100	85-100	75-96	40-50	2-8
	48-80	Sand*, fine sand, gravelly loamy sand.	SP*, SM	A-2*, A-1, A-3	0	0	80-100	60-100	30-80	0-35	0-0	NP
MvhAU:												
Moston, undrained-----	0-24	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	24-48	Coprogenous material*.	OL*	A-5*	0	0	95-100	95-100	85-100	75-96	40-50	2-8
	48-80	Sand*, fine sand, gravelly loamy sand.	SP*, SM	A-2*, A-1, A-3	0	0	80-100	60-100	30-80	0-35	0-0	NP
MvkA:												
Morocco-----	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	98-100	75-95	10-25	0-0	NP
	9-60	Sand*, fine sand, loamy fine sand, loamy sand.	SP-SM*, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
	60-80	Sand*, fine sand	SP-SM*, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
MwzAN:												
Muskego, drained	0-9	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	9-27	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	27-80	Coprogenous material*.	OL*	A-5*	0	0	95-100	95-100	85-100	75-96	40-50	2-8
MwzAU:												
Muskego, undrained-----	0-27	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	27-80	Coprogenous material*.	OL*	A-5*	0	0	95-100	95-100	85-100	75-96	40-50	2-8

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
<b>OkrA:</b>												
Oshtemo-----	0-9	Fine sandy loam*	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	9-14	Fine sandy loam*, sandy loam, loamy sand.	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
<b>OkrB:</b>												
Oshtemo-----	0-9	Fine sandy loam*	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	9-14	Fine sandy loam*, sandy loam, loamy sand.	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
<b>OkrC2:</b>												
Oshtemo-----	0-6	Fine sandy loam*	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	6-14	Fine sandy loam*, sandy loam, loamy sand.	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
OkrD:												
Oshtemo-----	0-9	Fine sandy loam*	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	9-14	Fine sandy loam*, sandy loam, loamy sand.	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
OlcA:												
Oshtemo-----	0-9	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	9-14	Sandy loam*, loamy sand, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
OlcB:												
Oshtemo-----	0-9	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	9-14	Sandy loam*, loamy sand, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
<b>OlC2:</b>												
<b>Oshtemo-----</b>												
	0-6	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	6-14	Sandy loam*, loamy sand, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
<b>OlC4:</b>												
<b>Oshtemo-----</b>												
	0-9	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	9-14	Sandy loam*, loamy sand, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
<b>OmgA:</b>												
<b>Osolo-----</b>												
	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	90-100	85-100	70-90	10-25	0-0	NP
	9-25	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	90-100	85-100	70-90	10-25	0-0	NP
	25-40	Sand*, fine sand	SP-SM*, SM, SP	A-2-4*, A-3	0	0	90-100	85-100	55-95	0-15	0-0	NP
	40-80	Fine sand*, sand	SP-SM*, SM, SP	A-2-4*, A-3	0	0	90-100	85-100	55-95	0-15	0-0	NP
<b>PaaAN:</b>												
<b>Palms, drained--</b>												
	0-35	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	35-80	Loam*, clay loam, fine sandy loam, silty clay loam.	CL*, CL-ML	A-6*, A-4	0	0	85-100	80-100	70-95	50-90	25-40	5-20
<b>PaaAU:</b>												
<b>Palms, undrained</b>												
	0-35	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
	35-80	Loam*, clay loam, fine sandy loam, silty clay loam.	CL*, CL-ML	A-6*, A-4	0	0	85-100	80-100	70-95	50-90	25-40	5-20

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Pmg: Pits, gravel.												
PxlA: Psammaquents.												
Pxo: Psamments.												
QuiA: Quinn-----	0-7	Loam*-----	CL*, ML, CL-ML	A-4*, A-6	0	0	95-100	90-100	85-95	55-70	15-40	NP-15
	7-47	Sandy loam*, loam.	SC-SM*, CL, ML, SC	A-4*, A-6	0	0-1	85-100	75-98	55-90	25-60	10-40	2-14
	47-80	Loamy sand*, sand.	SM*, SP-SM, SP	A-2-4*, A-3	0-1	0-5	70-100	55-98	55-70	0-20	0-0	NP
QujA: Quinn-----	0-7	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*, A-4	0	0	80-100	75-100	60-90	25-40	15-25	NP-10
	7-47	Sandy loam*, loam.	SC-SM, CL, ML, SC	A-4*, A-6	0	0-1	85-100	75-98	55-90	25-60	10-40	2-14
	47-80	Loamy sand*, sand.	SM*, SP-SM, SP	A-2-4*, A-3	0-1	0-5	70-100	55-98	55-70	0-20	0-0	NP
RenA: Rensselaer-----	0-15	Mucky loam*-----	CL*, CL-ML, ML	A-6*, A-4	0	0	95-100	90-98	75-85	50-65	20-40	3-20
	15-38	Clay loam*, loam	CL*, CL-ML	A-6*, A-4	0	0	85-100	75-100	60-95	50-75	20-50	5-30
	38-42	Loam*, sandy clay loam, sandy loam.	CL*, CL-ML, SC, SC-SM, SM, ML	A-4*, A-6, A-2-4, A-2-6	0	0	85-100	75-100	60-95	25-60	20-40	NP-20
	42-76	Stratified fine sand to silt loam*.	SM*, SP-SM, ML, CL, CL-ML, SP	A-4*, A-2-6, A-6, A-3, A-2-4	0	0	95-100	90-100	55-95	0-85	0-40	NP-15
	76-80	Loam*, fine sandy loam.	CL-ML*, SM, SC, ML, CL	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15
ReyA: Rensselaer-----	0-15	Loam*-----	CL*, CL-ML, ML	A-6*, A-4	0	0	95-100	90-98	75-85	50-65	20-40	3-20
	15-38	Clay loam*, loam	CL*, CL-ML	A-6*, A-4	0	0	85-100	75-100	60-95	50-75	20-50	5-30
	38-42	Loam*, sandy clay loam, sandy loam.	CL*, CL-ML, SC, SC-SM, SM, ML	A-4*, A-6, A-2-4, A-2-6	0	0	85-100	75-100	60-95	25-60	20-40	NP-20
	42-76	Stratified fine sand to silt loam*.	SM*, SP-SM, ML, CL, CL-ML, SP	A-4*, A-2-6, A-6, A-3, A-2-4	0	0	95-100	90-100	55-95	0-85	0-40	NP-15
	76-80	Loam*, fine sandy loam.	CL-ML*, SM, SC, ML, CL	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
RopA:												
Riddles-----	0-8	Fine sandy loam*	SC-SM*, SM	A-4*	0	0	95-100	80-100	75-90	40-55	15-30	NP-10
	8-13	Sandy clay loam*, loam, fine sandy loam.	CL*, CL-ML, SC, SC-SM	A-6*, A-4	0	0	90-100	80-100	75-95	40-70	10-50	NP-30
	13-33	Clay loam*, loam, sandy clay loam.	CL*, SC, SC-SM, CL-ML	A-6*, A-4	0	0-1	90-100	80-100	75-95	40-80	20-50	5-30
	33-63	Fine sandy loam*, sandy loam, loam.	SC-SM*, SM, ML, CL-ML	A-4*	0-1	0-3	90-100	80-98	65-90	40-70	15-30	NP-15
	63-90	Loamy sand*, sandy loam.	SC-SM*, SC, SP-SM, SM	A-2-4*, A-4	0	0	80-100	78-98	55-85	10-40	17-27	NP-10
	90-100	Fine sandy loam*, loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
Oshtemo-----	0-9	Fine sandy loam*	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	9-14	Fine sandy loam*, sandy loam, loamy sand.	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand*.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
RopB:												
Riddles-----	0-8	Fine sandy loam*	SC-SM*, SM	A-4*	0	0	95-100	80-100	75-90	40-55	15-30	NP-10
	8-13	Sandy clay loam*, loam, fine sandy loam.	CL*, CL-ML, SC, SC-SM	A-6*, A-4	0	0	90-100	80-100	75-95	40-70	10-50	NP-30
	13-33	Clay loam*, loam, sandy clay loam.	CL*, SC, SC-SM, CL-ML	A-6*, A-4	0	0-1	90-100	80-100	75-95	40-80	20-50	5-30
	33-63	Fine sandy loam*, sandy loam, loam.	SC-SM*, SM, ML, CL-ML	A-4*	0-1	0-3	90-100	80-98	65-90	40-70	15-30	NP-15
	63-90	Loamy sand*, sandy loam.	SC-SM*, SC, SP-SM, SM	A-2-4*, A-4	0	0	80-100	78-98	55-85	10-40	17-27	NP-10
	90-100	Fine sandy loam*, loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
RopB: Oshtemo-----	0-9	Fine sandy loam*	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	9-14	Fine sandy loam*, sandy loam, loamy sand.	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand*.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
RopC2: Riddles-----	0-5	Fine sandy loam*	SC-SM*, SM	A-4*	0	0	95-100	80-100	75-90	40-55	15-30	NP-10
	5-13	Sandy clay loam*, loam, fine sandy loam.	CL*, CL-ML, SC, SC-SM	A-6*, A-4	0	0	90-100	80-100	75-95	40-70	10-50	NP-30
	13-33	Clay loam*, loam, sandy clay loam.	CL*, SC, SC-SM, CL-ML	A-6*, A-4	0	0-1	90-100	80-100	75-95	40-80	20-50	5-30
	33-63	Fine sandy loam*, sandy loam, loam.	SC-SM*, SM, ML, CL-ML	A-4*	0-1	0-3	90-100	80-98	65-90	40-70	15-30	NP-15
	63-90	Loamy sand*, sandy loam.	SC-SM*, SC, SP-SM, SM	A-2-4*, A-4	0	0	80-100	78-98	55-85	10-40	17-27	NP-10
	90-100	Fine sandy loam*, loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
Oshtemo-----	0-6	Fine sandy loam*	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	6-14	Fine sandy loam*, sandy loam, loamy sand.	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP



Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
RopD2: Riddles-----	0-5	Fine sandy loam*	SC-SM*, SM	A-4*	0	0	95-100	80-100	75-90	40-55	15-30	NP-10
	5-13	Sandy clay loam*, loam, fine sandy loam.	CL*, CL-ML, SC, SC-SM	A-6*, A-4	0	0	90-100	80-100	75-95	40-70	10-50	NP-30
	13-33	Clay loam*, loam, sandy clay loam.	CL*, SC, SC- SM, CL-ML	A-6*, A-4	0	0-1	90-100	80-100	75-95	40-80	20-50	5-30
	33-63	Fine sandy loam*, sandy loam, loam.	SC-SM*, SM, ML, CL-ML	A-4*	0-1	0-3	90-100	80-98	65-90	40-70	15-30	NP-15
	63-90	Loamy sand*, sandy loam.	SC-SM*, SC, SP-SM, SM	A-2-4*, A-4	0	0	80-100	78-98	55-85	10-40	17-27	NP-10
	90-100	Fine sandy loam*, loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
Oshtemo-----	0-6	Fine sandy loam*	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	6-14	Fine sandy loam*, sandy loam, loamy sand.	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
RoqB: Riddles-----	0-8	Fine sandy loam*	SC-SM*, SM	A-4*	0	0	95-100	80-100	75-90	40-55	15-30	NP-10
	8-13	Sandy clay loam*, loam, fine sandy loam.	CL*, CL-ML, SC, SC-SM	A-6*, A-4	0	0	90-100	80-100	75-95	40-70	10-50	NP-30
	13-33	Clay loam*, loam, sandy clay loam.	CL*, SC, SC-SM, CL-ML	A-6*, A-4	0	0-1	90-100	80-100	75-95	40-80	20-50	5-30
	33-63	Fine sandy loam*, sandy loam, loam.	SC-SM*, SM, ML, CL-ML	A-4*	0-1	0-3	90-100	80-98	65-90	40-70	15-30	NP-15
	63-90	Loamy sand*, sandy loam.	SC-SM*, SC, SP-SM, SM	A-2-4*, A-4	0	0	80-100	78-98	55-85	10-40	17-27	NP-10
	90-100	Fine sandy loam*, loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
Metee-----	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	95-98	75-90	10-25	0-0	NP
	9-28	Loamy sand*, loamy fine sand, sand.	SM*, SP-SM	A-2-4*	0	0	100	85-98	75-90	0-25	0-0	NP
	28-32	Sandy loam*, fine sandy loam, sandy clay loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-2-4	0	0	90-100	75-100	55-95	25-60	10-60	NP-20
	32-44	Clay loam*, loam	CL*, CL-ML	A-6*, A-4	0	0-1	95-100	90-100	85-95	55-80	20-50	5-30
	44-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
RoqC2: Riddles-----	0-5	Fine sandy loam*	SC-SM*, SM	A-4*	0	0	95-100	80-100	75-90	40-55	15-30	NP-10
	5-13	Sandy clay loam*, loam, fine sandy loam.	CL*, CL-ML, SC, SC-SM	A-6*, A-4	0	0	90-100	80-100	75-95	40-70	10-50	NP-30
	13-33	Clay loam*, loam, sandy clay loam.	CL*, SC, SC-SM, CL-ML	A-6*, A-4	0	0-1	90-100	80-100	75-95	40-80	20-50	5-30
	33-63	Fine sandy loam*, sandy loam, loam.	SC-SM*, SM, ML, CL-ML	A-4*	0-1	0-3	90-100	80-98	65-90	40-70	15-30	NP-15
	63-90	Loamy sand*, sandy loam.	SC-SM*, SC, SP-SM, SM	A-2-4*, A-4	0	0	80-100	78-98	55-85	10-40	17-27	NP-10
	90-100	Fine sandy loam*, loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
Metea-----	0-7	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	95-98	75-90	10-25	0-0	NP
	7-28	Loamy sand*, loamy fine sand, sand.	SM*, SP-SM	A-2-4*	0	0	100	85-98	75-90	0-25	0-0	NP
	28-32	Sandy loam*, fine sandy loam, sandy clay loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-2-4	0	0	90-100	75-100	55-95	25-60	10-60	NP-20
	32-44	Clay loam*, loam	CL*, CL-ML	A-6*, A-4	0	0-1	95-100	90-100	85-95	55-80	20-50	5-30
	44-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
RoqD2: Riddles-----	0-5	Fine sandy loam*	SC-SM*, SM	A-4*	0	0	95-100	80-100	75-90	40-55	15-30	NP-10
	5-13	Sandy clay loam*, loam, fine sandy loam.	CL*, CL-ML, SC, SC-SM	A-6*, A-4	0	0	90-100	80-100	75-95	40-70	10-50	NP-30
	13-33	Clay loam*, loam, sandy clay loam.	CL*, SC, SC-SM, CL-ML	A-6*, A-4	0	0-1	90-100	80-100	75-95	40-80	20-50	5-30
	33-63	Fine sandy loam*, sandy loam, loam.	SC-SM*, SM, ML, CL-ML	A-4*	0-1	0-3	90-100	80-98	65-90	40-70	15-30	NP-15
	63-90	Loamy sand*, sandy loam.	SC-SM*, SC, SP-SM, SM	A-2-4*, A-4	0	0	80-100	78-98	55-85	10-40	17-27	NP-10
	90-100	Fine sandy loam*, loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
Metea-----	0-7	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	95-98	75-90	10-25	0-0	NP
	7-28	Loamy sand*, loamy fine sand, sand.	SM*, SP-SM	A-2-4*	0	0	100	85-98	75-90	0-25	0-0	NP
	28-32	Sandy loam*, fine sandy loam, sandy clay loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-2-4	0	0	90-100	75-100	55-95	25-60	10-60	NP-20
	32-44	Clay loam*, loam	CL*, CL-ML	A-6*, A-4	0	0-1	95-100	90-100	85-95	55-80	20-50	5-30
	44-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
<b>SdzA:</b>												
Selfridge-----	0-11	Loamy sand*-----	SM*, SC-SM, SP-SM	A-2*, A-1	0	0-5	95-100	90-100	45-80	10-35	0-20	NP-5
	11-25	Loamy sand*, sand, loamy fine sand.	SM*, SP-SM	A-2-4*, A-3	0	0-1	95-100	90-100	55-95	5-25	0-0	NP
	25-29	Sandy loam*, sandy clay loam, loam.	SC-SM*, SC, ML, CL-ML, CL	A-4*, A-6, A-2-6, A-2-4	0	0-1	90-100	85-100	50-95	25-60	17-40	NP-25
	29-32	Clay loam*, silty clay loam, loam.	CL*, CL-ML	A-6*, A-4, A-7-6	0	0-1	90-100	85-100	80-100	55-95	20-50	5-30
	32-80	Loam*-----	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-98	70-90	45-70	15-30	NP-15
<b>Crosier-----</b>	0-11	Loam*-----	CL-ML*, CL, ML	A-4*, A-6	0-1	0-1	95-100	90-100	85-95	55-90	20-40	NP-17
	11-30	Clay loam*, loam, sandy clay loam.	CL*, SC	A-6*, A-7-6	0-1	0-1	95-100	90-100	75-95	45-80	25-50	12-30
	30-38	Loam*, sandy loam, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-95	40-70	15-40	NP-22
	38-80	Loam*, sandy loam, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15
<b>SdzaB:</b>												
Selfridge-----	0-11	Loamy sand*-----	SM*, SC-SM, SP-SM	A-2*, A-1	0	0-5	95-100	90-100	45-80	10-35	0-20	NP-5
	11-25	Loamy sand*, sand, loamy fine sand.	SM*, SP-SM	A-2-4*, A-3	0	0-1	95-100	90-100	55-95	5-25	0-0	NP
	25-29	Sandy loam*, sandy clay loam, loam.	SC-SM*, SC, ML, CL-ML, CL	A-4*, A-6, A-2-6, A-2-4	0	0-1	90-100	85-100	50-95	25-60	17-40	NP-25
	29-32	Clay loam*, silty clay loam, loam.	CL*, CL-ML	A-6*, A-4, A-7-6	0	0-1	90-100	85-100	80-100	55-95	20-50	5-30
	32-80	Loam*-----	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-98	70-90	45-70	15-30	NP-15
<b>Brems-----</b>	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	85-100	60-100	10-35	0-0	NP
	9-27	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	85-100	60-100	10-35	0-0	NP
	27-72	Sand*, fine sand, loamy sand.	SP*, SP-SM, SM	A-2-4*, A-3	0	0	100	85-100	55-95	0-25	0-0	NP
	72-80	Sand*, fine sand, loamy sand.	SP*, SP-SM, SM	A-2-4*, A-3	0	0	100	85-100	55-95	0-25	0-0	NP
<b>SesA:</b>												
Schoolcraft-----	0-14	Loam*-----	CL*, CL-ML	A-4*	0	0	95-100	85-100	70-95	50-75	20-30	5-10
	14-29	Sandy clay loam*, clay loam, loam.	CL*, SC	A-6*, A-7	0	0	90-100	85-100	70-95	35-75	25-45	10-20
	29-39	Gravelly sandy loam*, gravelly loamy sand, gravelly sandy clay loam.	SC-SM*, SM	A-2-4*	0	0	65-100	55-80	30-70	10-35	10-40	NP-20
	39-77	Sand*, fine sand, loamy sand.	SP-SM*, SM, SP	A-2-4*, A-3	0	0	90-100	85-100	55-85	0-25	0-0	NP
	77-95	Gravelly coarse sand*, coarse sand, sand.	SW-SM*, GP, SP-SM, SW	A-1-a*, A-1-B	0	0-5	45-90	35-85	15-40	0-10	0-0	NP

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Sn1A:												
Southwest-----	0-10	Silt loam*-----	CL*, ML	A-6*, A-4	0	0	100	100	95-100	75-100	27-39	3-15
	10-23	Silty clay loam*, silt loam.	CL*, ML	A-6*, A-4	0	0	100	100	95-100	75-100	27-39	3-15
	23-34	Silty clay loam*, silt loam, loam.	CL*, CL-ML, ML	A-6*, A-4	0	0	95-100	92-100	85-100	50-100	20-45	3-33
	34-45	Silty clay loam*, silt loam, loam.	CL*, CL-ML, ML	A-6*, A-4, A-7-6	0	0	95-100	92-100	85-100	50-100	20-45	3-33
	45-75	Silty clay loam*, silt loam.	CL*, CL-ML, ML	A-6*, A-4, A-7-6	0	0	95-100	92-100	85-100	65-100	25-45	3-28
	75-80	Silt loam*, loam, clay loam.	CL*, CL-ML, ML	A-6*, A-7-6, A-4	0	0-1	95-100	92-100	75-100	50-100	20-45	NP-24
TmpA:												
Tracy-----	0-9	Sandy loam*-----	SC-SM*, SM, SC	A-2-4*, A-4	0	0	80-100	75-98	60-80	25-40	0-25	NP-10
	9-47	Sandy loam*, loam.	SC-SM*, CL, ML, SM	A-4*, A-6	0	0	85-100	75-98	55-90	25-60	10-40	NP-20
	47-60	Gravelly sandy clay loam*, gravelly loamy sand.	SC*, SC-SM, SM, SP-SM	A-6*, A-4, A-2-4	0	0-1	60-90	50-75	30-70	10-60	0-40	NP-20
	60-86	Stratified loamy sand to gravelly sand*.	SM*, SP-SM	A-3*, A-1-B, A-2-4	0-1	0-3	65-100	50-98	15-85	0-25	0-0	NP
TmpB:												
Tracy-----	0-9	Sandy loam*-----	SC-SM*, SM, SC	A-2-4*, A-4	0	0	80-100	75-98	60-80	25-40	0-25	NP-10
	9-47	Sandy loam*, loam.	SC-SM*, CL, ML, SM	A-4*, A-6	0	0	85-100	75-98	55-90	25-60	10-40	NP-20
	47-60	Gravelly sandy clay loam*, gravelly loamy sand.	SC*, SC-SM, SM, SP-SM	A-6*, A-4, A-2-4	0	0-1	60-90	50-75	30-70	10-60	0-40	NP-20
	60-86	Stratified loamy sand to gravelly sand*.	SM*, SP-SM	A-3*, A-1-B, A-2-4	0-1	0-3	65-100	50-98	15-85	0-25	0-0	NP
TmpC2:												
Tracy-----	0-5	Sandy loam*-----	SC-SM*, SM, SC	A-2-4*, A-4	0	0	80-100	75-98	60-80	25-40	0-25	NP-10
	5-47	Sandy loam*, loam.	SC-SM*, CL, ML, SM	A-4*, A-6	0	0	85-100	75-98	55-90	25-60	10-40	NP-20
	47-60	Gravelly sandy clay loam*, gravelly loamy sand.	SC*, SC-SM, SM, SP-SM	A-6*, A-4, A-2-4	0	0-1	60-90	50-75	30-70	10-60	0-40	NP-20
	60-86	Stratified loamy sand to gravelly sand*.	SM*, SP-SM	A-3*, A-1-B, A-2-4	0-1	0-3	65-100	50-98	15-85	0-25	0-0	NP
TmpD:												
Tracy-----	0-9	Sandy loam*-----	SC-SM*, SM, SC	A-2-4*, A-4	0	0	80-100	75-98	60-80	25-40	0-25	NP-10
	9-47	Sandy loam*, loam.	SC-SM*, CL, ML, SM	A-4*, A-6	0	0	85-100	75-98	55-90	25-60	10-40	NP-20
	47-60	Gravelly sandy clay loam*, gravelly loamy sand.	SC*, SC-SM, SM, SP-SM	A-6*, A-4, A-2-4	0	0-1	60-90	50-75	30-70	10-60	0-40	NP-20
	60-86	Stratified loamy sand to gravelly sand*.	SM*, SP-SM	A-3*, A-1-B, A-2-4	0-1	0-3	65-100	50-98	15-85	0-25	0-0	NP

Table 16.--Engineering Index Properties--Continued

[illegible]

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UdeA: Urban land.												
Bainter-----	0-9	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	9-13	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	13-31	Sandy loam*, coarse sandy loam.	SM*, SC, SC-SM	A-4*, A-2-4	0	0	80-100	75-95	30-80	15-40	14-27	NP-13
	31-44	Coarse sandy loam*, sandy loam, sandy clay loam, gravelly coarse sandy loam.	SM*, GM, SC, SC-SM	A-4*, A-2-4	0	0-5	55-95	50-90	25-80	15-50	14-40	NP-18
	44-54	Sandy clay loam*	CL*, CL-ML, SC, SC-SM	A-6*, A-2-4, A-2-6, A-4	0	0	60-98	50-90	30-85	15-65	20-60	5-30
	54-80	Coarse sand*, sand, gravelly coarse sand.	SW-SM*, GP, SP-SM, SW	A-1-a*, A-1-B	0	0-5	45-90	35-85	15-40	0-10	0-0	NP
UdeB: Urban land.												
Bainter-----	0-9	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	9-13	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	13-31	Sandy loam*, coarse sandy loam.	SM*, SC, SC-SM	A-4*, A-2-4	0	0	80-100	75-95	30-80	15-40	14-27	NP-13
	31-44	Coarse sandy loam*, sandy loam, sandy clay loam, gravelly coarse sandy loam.	SM*, GM, SC, SC-SM	A-4*, A-2-4	0	0-5	55-95	50-90	25-80	15-50	14-40	NP-18
	44-54	Sandy clay loam*	CL*, CL-ML, SC, SC-SM	A-6*, A-2-4, A-2-6, A-4	0	0	60-98	50-90	30-85	15-65	20-60	5-30
	54-80	Coarse sand*, sand, gravelly coarse sand.	SW-SM*, GP, SP-SM, SW	A-1-a*, A-1-B	0	0-5	45-90	35-85	15-40	0-10	0-0	NP

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UdeC: Urban land.												
Bainter-----	0-5	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	5-13	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	13-31	Sandy loam*, coarse sandy loam.	SM*, SC, SC-SM	A-4*, A-2-4	0	0	80-100	75-95	30-80	15-40	14-27	NP-13
	31-44	Coarse sandy loam*, sandy loam, sandy clay loam, gravelly coarse sandy loam.	SM*, GM, SC, SC-SM	A-4*, A-2-4	0	0-5	55-95	50-90	25-80	15-50	14-40	NP-18
	44-54	Sandy clay loam*	CL*, CL-ML, SC, SC-SM	A-6*, A-2-4, A-2-6, A-4	0	0	60-98	50-90	30-85	15-65	20-60	5-30
	54-80	Coarse sand*, sand, gravelly coarse sand.	SW-SM*, GP, SP-SM, SW	A-1-a*, A-1-B	0	0-5	45-90	35-85	15-40	0-10	0-0	NP
UdkA: Urban land.												
Brady-----	0-9	Sandy loam*-----	SM*, CL-ML, ML, SC-SM	A-4*, A-1, A-2	0	0-5	95-100	75-100	45-85	20-55	0-25	NP-7
	9-37	Sandy loam*, sandy clay loam, gravelly sandy loam.	SM*, CL, ML, SC	A-4*, A-6, A-1, A-2	0	0-5	85-100	60-100	35-90	20-55	15-35	NP-15
	37-56	Loamy sand*, sandy loam.	SM*, SC, SC-SM, SP-SM	A-2-4*, A-1, A-2, A-4	0	0-5	95-100	75-100	35-70	10-40	0-30	NP-10
	56-80	Gravelly sand*, coarse sand, gravel.	SP-SM*, GP, GP-GM, SP	A-1*, A-2-4, A-3	0	0-5	40-95	30-85	20-60	0-10	0-0	NP
UdzA: Urban land.												
Auten-----	0-9	Loam*-----	CL*, ML, CL-ML	A-4*, A-6	0	0	95-100	90-100	85-95	55-70	15-40	NP-15
	9-22	Clay loam*, loam, sandy clay loam.	CL*, SC	A-6*, A-7-6	0-1	0-1	95-100	90-100	75-95	45-80	25-50	12-30
	22-80	Stratified loamy sand to sand*.	SM*, SP, SP-SM	A-3*, A-2-4	0-1	0-3	80-100	55-98	40-80	0-20	0-0	NP
UeaA: Urban land.												
Crosier-----	0-11	Loam*-----	CL-ML*, CL, ML	A-4*, A-6	0-1	0-1	95-100	90-100	85-95	55-90	20-40	NP-17
	11-30	Clay loam*, loam, sandy clay loam.	CL*, SC	A-6*, A-7-6	0-1	0-1	95-100	90-100	75-95	45-80	25-50	12-30
	30-38	Loam*, sandy loam, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-95	40-70	15-40	NP-22
	38-80	Loam*, sandy loam, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UeqA: Urban land.												
Gilford-----	0-14	Sandy loam*-----	SC-SM*, SC, SM	A-2-4*, A-4	0	0	95-100	95-100	55-85	25-45	15-25	NP-10
	14-32	Sandy loam*, fine sandy loam.	SC-SM*, SC, SM	A-2-4*	0	0	95-100	95-100	55-90	25-50	15-30	NP-10
	32-38	Loamy sand*, sand, loamy fine sand.	SM*, SP, SP-SM	A-2-4*, A-1-B, A-3	0	0	95-100	95-100	40-95	0-25	0-0	NP
	38-80	Sand*, coarse sand, loamy sand.	SM*, SP, SP-SM	A-2-4*, A-1-B, A-3	0	0	85-100	85-100	35-85	0-25	0-0	NP
UewA: Urban land.												
Brems-----	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	85-100	60-100	10-35	0-0	NP
	9-27	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	85-100	60-100	10-35	0-0	NP
	27-72	Sand*, fine sand, loamy sand.	SP*, SP-SM, SM	A-2-4*, A-3	0	0	100	85-100	55-95	0-25	0-0	NP
	72-80	Sand*, fine sand, loamy sand.	SP*, SP-SM, SM	A-2-4*, A-3	0	0	100	85-100	55-95	0-25	0-0	NP
Morocco-----	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	98-100	75-95	10-25	0-0	NP
	9-60	Sand*, fine sand, loamy fine sand, loamy sand.	SP-SM*, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
	60-80	Sand*, fine sand	SP-SM*, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
UfbA: Urban land.												
Brookston-----	0-9	Loam*-----	CL*, CL-ML, ML	A-4*, A-6	0	0	95-100	90-100	85-95	55-75	20-40	NP-17
	9-48	Clay loam*, silty clay loam, loam.	CL*	A-6*, A-7-6	0	0	98-100	85-100	75-100	55-90	25-50	12-33
	48-68	Loam*, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-95	40-70	15-40	NP-22
	68-80	Loam*, fine sandy loam.	CL-ML*, SM, ML, CL, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15
UfhA: Urban land.												
Coloma-----	0-12	Sand*-----	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-70	2-15	0-14	NP
	12-47	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-75	2-30	0-14	NP
	47-80	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3, A-4	0	0-5	75-100	75-100	50-100	2-40	0-14	NP
UfhB: Urban land.												
Coloma-----	0-12	Sand*	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-70	2-15	0-14	NP
	12-47	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-75	2-30	0-14	NP
	47-80	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3, A-4	0	0-5	75-100	75-100	50-100	2-40	0-14	NP



Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UfhC: Urban land.												
Coloma-----	0-12	Sand*-----	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-70	2-15	0-14	NP
	12-47	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3	0	0-5	75-100	75-100	50-75	2-30	0-14	NP
	47-80	Sand*, loamy sand.	SP-SM*, SM, SP	A-2*, A-3, A-4	0	0-5	75-100	75-100	50-100	2-40	0-14	NP
UfmA: Urban land.												
Coupee-----	0-21	Silt loam*-----	CL*, ML	A-6*, A-4	0	0	100	100	95-100	75-100	26-39	2-15
	21-33	Clay loam*, loam	CL*, CL-ML	A-6*, A-7	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	33-52	Stratified loamy sand to sand to coarse sand*.	SM*, SP-SM	A-3*, A-2-4	0	0-1	85-100	75-98	35-85	0-25	0-0	NP
	52-98	Very channery coarse sand*, fine sand, sand.	SW-SM*, SW	A-1-a*	0-2	0-5	45-100	25-98	10-85	0-15	0-0	NP
UfrA: Urban land.												
Del Rey-----	0-9	Silty clay loam*	CL*	A-6*, A-7	0	0	95-100	95-100	90-100	70-95	30-45	10-25
	9-33	Silty clay*, silty clay loam.	CH*, CL	A-7*	0	0	95-100	95-100	90-100	85-95	40-55	20-30
	33-90	Silty clay loam*, silt loam.	CL*	A-6*, A-7	0	0	95-100	95-100	90-100	70-95	30-45	10-25
UftA: Urban land.												
Elston-----	0-20	Sandy loam*-----	SC-SM*, SM	A-2-4*, A-4	0	0	85-100	85-100	60-80	25-40	0-25	NP-10
	20-34	Sandy loam*-----	SC-SM*, SM	A-4*, A-2-4	0	0-1	85-100	85-100	60-80	25-40	10-60	NP-20
	34-72	Loamy sand*, sandy loam.	SM*, SP-SM	A-2-4*, A-1, A-2	0-1	0-3	85-100	85-100	45-85	10-40	0-30	NP-10
	72-80	Sand*, gravelly sand.	SP-SM*, SM	A-2-4*, A-1-B, A-3	0-1	0-3	65-100	50-98	15-80	0-15	0-0	NP
UfzA: Urban land.												
Mishawaka-----	0-12	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*, A-4	0	0	80-100	75-100	60-90	25-40	15-25	NP-10
	12-18	Sandy loam*-----	SC-SM*, SC, SM	A-2-4*, A-4	0	0	80-100	75-100	60-90	25-40	15-25	NP-10
	18-25	Gravelly loamy sand*, loamy sand, sandy loam.	SM*, GM, SC, SC-SM	A-2-4*, A-1-B	0	0	55-100	50-100	40-85	10-25	0-25	NP-10
	25-58	Sand*, fine sand	SP-SM*, SM	A-2-4*, A-1-B, A-3	0	0	80-100	75-100	30-80	5-35	0-0	NP
	58-80	Sand*, coarse sand.	SP-SM*, SM	A-2-4*, A-1-B, A-3	0	0	80-100	75-100	30-70	0-15	0-0	NP

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UgaA: Urban land.												
Morocco-----	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	98-100	75-95	10-25	0-0	NP
	9-60	Sand*, fine sand, loamy fine sand, loamy sand.	SP-SM*, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
	60-80	Sand*, fine sand	SP-SM*, SM	A-2-4*, A-3	0	0	100	98-100	70-95	0-25	0-0	NP
UglA: Urban land.												
Osolo-----	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	90-100	85-100	70-90	10-25	0-0	NP
	9-25	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	90-100	85-100	70-90	10-25	0-0	NP
	25-40	Sand*, fine sand	SP-SM*, SM, SP	A-2-4*, A-3	0	0	90-100	85-100	55-95	0-15	0-0	NP
	40-80	Fine sand*, sand	SP-SM*, SM, SP	A-2-4*, A-3	0	0	90-100	85-100	55-95	0-15	0-0	NP
UgrA: Urban land.												
Rensselaer-----	0-15	Loam*-----	CL*, CL-ML, ML	A-6*, A-4	0	0	95-100	90-98	75-85	50-65	20-40	3-20
	15-38	Clay loam*, loam	CL*, CL-ML	A-6*, A-4	0	0	85-100	75-100	60-95	50-75	20-50	5-30
	38-42	Loam*, sandy clay loam, sandy loam.	CL*, CL-ML, SC, SC-SM, SM, ML	A-4*, A-6, A-2-4, A-2-6	0	0	85-100	75-100	60-95	25-60	20-40	NP-20
	42-76	Stratified fine sand to silt loam*.	SM*, SP-SM, ML, CL, CL-ML, SP	A-4*, A-2-6, A-6, A-3, A-2-4	0	0	95-100	90-100	55-95	0-85	0-40	NP-15
	76-80	Loam*, fine sandy loam.	CL-ML*, SM, SC, ML, CL	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15
UgsA: Urban land.												
Riddles-----	0-8	Fine sandy loam*	SC-SM*, SM	A-4*	0	0	95-100	80-100	75-90	40-55	15-30	NP-10
	8-13	Sandy clay loam*, loam, fine sandy loam.	CL*, CL-ML, SC, SC-SM	A-6*, A-4	0	0	90-100	80-100	75-95	40-70	10-50	NP-30
	13-33	Clay loam*, loam, sandy clay loam.	CL*, SC, SC-SM, CL-ML	A-6*, A-4	0	0-1	90-100	80-100	75-95	40-80	20-50	5-30
	33-63	Fine sandy loam*, sandy loam, loam.	SC-SM*, SM, ML, CL-ML	A-4*	0-1	0-3	90-100	80-98	65-90	40-70	15-30	NP-15
	63-90	Loamy sand*, sandy loam.	SC-SM*, SC, SP-SM, SM	A-2-4*, A-4	0	0	80-100	78-98	55-85	10-40	17-27	NP-10
	90-100	Fine sandy loam*, loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UgsA:												
Oshtemo-----	0-9	Fine sandy loam*	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	9-14	Fine sandy loam*, sandy loam, loamy sand.	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
UgsB:												
Urban land.												
Riddles-----	0-8	Fine sandy loam*	SC-SM*, SM	A-4*	0	0	95-100	80-100	75-90	40-55	15-30	NP-10
	8-13	Sandy clay loam*, loam, fine sandy loam.	CL*, CL-ML, SC, SC-SM	A-6*, A-4	0	0	90-100	80-100	75-95	40-70	10-50	NP-30
	13-33	Clay loam*, loam, sandy clay loam.	CL*, SC, SC-SM, CL-ML	A-6*, A-4	0	0-1	90-100	80-100	75-95	40-80	20-50	5-30
	33-63	Fine sandy loam*, sandy loam, loam.	SC-SM*, SM, ML, CL-ML	A-4*	0-1	0-3	90-100	80-98	65-90	40-70	15-30	NP-15
	63-90	Loamy sand*, sandy loam.	SC-SM*, SC, SP-SM, SM	A-2-4*, A-4	0	0	80-100	78-98	55-85	10-40	17-27	NP-10
	90-100	Fine sandy loam*, loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
Oshtemo-----	0-9	Fine sandy loam*	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	9-14	Fine sandy loam*, sandy loam, loamy sand.	SM*, SP-SM	A-2-4*	0	0	80-100	80-100	55-80	10-25	0-0	NP
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand*.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UgvA: Urban land.												
Tyner-----	0-12	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	90-100	85-100	55-85	10-25	0-0	NP
	12-20	Loamy sand*, loamy fine sand.	SM*, SP-SM	A-2-4*	0	0	90-100	85-100	55-95	10-25	0-0	NP
	20-41	Sand*, fine sand, loamy sand.	SP-SM*, SM, SP	A-2-4*, A-3	0	0	90-100	85-100	55-85	0-25	0-0	NP
	41-80	Sand*, coarse sand, fine sand.	SP-SM*, SM, SP	A-2-4*, A-1-B, A-3	0	0	90-100	85-100	35-95	0-15	0-0	NP
UgvB: Urban land.												
Tyner-----	0-12	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	90-100	85-100	55-85	10-25	0-0	NP
	12-20	Loamy sand*, loamy fine sand.	SM*, SP-SM	A-2-4*	0	0	90-100	85-100	55-95	10-25	0-0	NP
	20-41	Sand*, fine sand, loamy sand.	SP-SM*, SM, SP	A-2-4*, A-3	0	0	90-100	85-100	55-85	0-25	0-0	NP
	41-80	Sand*, coarse sand, fine sand.	SP-SM*, SM, SP	A-2-4*, A-1-B, A-3	0	0	90-100	85-100	35-95	0-15	0-0	NP
UgvC: Urban land.												
Tyner-----	0-12	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	90-100	85-100	55-85	10-25	0-0	NP
	12-20	Loamy sand*, loamy fine sand.	SM*, SP-SM	A-2-4*	0	0	90-100	85-100	55-95	10-25	0-0	NP
	20-41	Sand*, fine sand, loamy sand.	SP-SM*, SM, SP	A-2-4*, A-3	0	0	90-100	85-100	55-85	0-25	0-0	NP
	41-80	Sand*, coarse sand, fine sand.	SP-SM*, SM, SP	A-2-4*, A-1-B, A-3	0	0	90-100	85-100	35-95	0-15	0-0	NP
UgvD: Urban land.												
Tyner-----	0-12	Loamy sand*	SM*, SP-SM	A-2-4*	0	0	90-100	85-100	55-85	10-25	0-0	NP
	12-20	Loamy sand*, loamy fine sand.	SM*, SP-SM	A-2-4*	0	0	90-100	85-100	55-95	10-25	0-0	NP
	20-41	Sand*, fine sand, loamy sand.	SP-SM*, SM, SP	A-2-4*, A-3	0	0	90-100	85-100	55-85	0-25	0-0	NP
	41-80	Sand*, coarse sand, fine sand.	SP-SM*, SM, SP	A-2-4*, A-1-B, A-3	0	0	90-100	85-100	35-95	0-15	0-0	NP
UhmA: Urban land.												
Hillsdale-----	0-8	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	8-14	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	14-44	Sandy loam*-----	SC-SM*, SC	A-4*, A-2-4	0	0	95-100	90-100	75-95	25-40	15-50	NP-30
	44-84	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
Uhmb: Urban land.												
Hillsdale-----	0-8	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	8-14	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	14-44	Sandy loam*-----	SC-SM*, SC	A-4*, A-2-4	0	0	95-100	90-100	75-95	25-40	15-50	NP-30
	44-84	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10
UhoC: Urban land.												
Hillsdale-----	0-8	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	8-14	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	14-44	Sandy loam*-----	SC-SM*, SC	A-4*, A-2-4	0	0	95-100	90-100	75-95	25-40	15-50	NP-30
	44-84	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10
Oshtemo-----	0-9	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	9-14	Sandy loam*, loamy sand, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
UhoD: Urban land.												
Hillsdale-----	0-8	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	8-14	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	14-44	Sandy loam*-----	SC-SM*, SC	A-4*, A-2-4	0	0	95-100	90-100	75-95	25-40	15-50	NP-30
	44-84	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UhoD: Oshtemo-----	0-9	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	9-14	Sandy loam*, loamy sand, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
UhpC: Urban land.												
Hillsdale-----	0-8	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	8-14	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	14-44	Sandy loam*-----	SC-SM*, SC	A-4*, A-2-4	0	0	95-100	90-100	75-95	25-40	15-50	NP-30
	44-84	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10
Tracy-----	0-5	Sandy loam*-----	SC-SM*, SM, SC	A-2-4*, A-4	0	0	80-100	75-98	60-80	25-40	0-25	NP-10
	5-47	Sandy loam*, loam.	SC-SM*, CL, ML, SM	A-4*, A-6	0	0	85-100	75-98	55-90	25-60	10-40	NP-20
	47-60	Gravelly sandy clay loam*, gravelly loamy sand.	SC*, SC-SM, SM, SP-SM	A-6*, A-4, A-2-4	0	0-1	60-90	50-75	30-70	10-60	0-40	NP-20
	60-86	Stratified loamy sand to gravelly sand*.	SM*, SP-SM	A-3*, A-1-B, A-2-4	0-1	0-3	65-100	50-98	15-85	0-25	0-0	NP
UhpD: Urban land.												
Hillsdale-----	0-8	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	8-14	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-95	20-50	15-25	NP-10
	14-44	Sandy loam*-----	SC-SM*, SC	A-4*, A-2-4	0	0	95-100	90-100	75-95	25-40	15-50	NP-30
	44-84	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10

Table 16.--Engineering Index Properties--Continued

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Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UkeA:												
Milford-----	0-18	Silty clay loam*	CL*, CL-ML	A-6*, A-4	0	0	100	95-100	90-100	70-90	25-40	5-20
	18-50	Silty clay*, silty clay loam, clay loam.	CH*, CL	A-7*	0	0	100	95-100	90-100	75-100	40-60	20-40
	50-60	Stratified silt loam to silty clay loam to silty clay*.	CL*, SC	A-7*, A-6	0	0	95-100	95-100	90-100	45-100	25-50	10-30
UkxA:												
Urban land.												
Oshtemo-----	0-9	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	9-14	Sandy loam*, loamy sand, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
UkxB:												
Urban land.												
Oshtemo-----	0-9	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	9-14	Sandy loam*, loamy sand, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP



Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UkxC: Urban land.												
Oshtemo-----	0-9	Sandy loam*-----	SM*, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	70-90	25-40	15-25	NP-10
	9-14	Sandy loam*, loamy sand, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	14-35	Sandy loam*, gravelly sandy loam, sandy clay loam, gravelly sandy clay loam, fine sandy loam.	SC-SM*, CL, SC, SM	A-2-4*, A-4, A-6	0	0	80-100	80-95	45-80	20-50	10-50	NP-20
	35-60	Loamy sand*-----	SM*	A-2-4*	0	0	100	100	50-80	15-35	0-14	NP
	60-80	Stratified gravelly coarse sand to coarse sand to sand to gravelly sand*, very gravelly coarse sand.	SP-SM*, SW, SW-SM	A-1*	0-1	0-5	55-85	35-85	10-50	0-15	0-0	NP
UmfB: Urban land.												
Riddles-----	0-8	Fine sandy loam*	SC-SM*, SM	A-4*	0	0	95-100	80-100	75-90	40-55	15-30	NP-10
	8-13	Sandy clay loam*, loam, fine sandy loam.	CL*, CL-ML, SC, SC-SM	A-6*, A-4	0	0	90-100	80-100	75-95	40-70	10-50	NP-30
	13-33	Clay loam*, loam, sandy clay loam.	CL*, SC, SC-SM, CL-ML	A-6*, A-4	0	0-1	90-100	80-100	75-95	40-80	20-50	5-30
	33-63	Fine sandy loam*, sandy loam, loam.	SC-SM*, SM, ML, CL-ML	A-4*	0-1	0-3	90-100	80-98	65-90	40-70	15-30	NP-15
	63-90	Loamy sand*, sandy loam.	SC-SM*, SC, SP-SM, SM	A-2-4*, A-4	0	0	80-100	78-98	55-85	10-40	17-27	NP-10
	90-100	Fine sandy loam*, loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
Metee-----	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	95-98	75-90	10-25	0-0	NP
	9-28	Loamy sand*, loamy fine sand, sand.	SM*, SP-SM	A-2-4*	0	0	100	85-98	75-90	0-25	0-0	NP
	28-32	Sandy loam*, fine sandy loam, sandy clay loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-2-4	0	0	90-100	75-100	55-95	25-60	10-60	NP-20
	32-44	Clay loam*, loam	CL*, CL-ML	A-6*, A-4	0	0-1	95-100	90-100	85-95	55-80	20-50	5-30
	44-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
UmfC: Urban land.												
Riddles-----	0-5	Fine sandy loam*	SC-SM*, SM	A-4*	0	0	95-100	80-100	75-90	40-55	15-30	NP-10
	5-13	Sandy clay loam*, loam, fine sandy loam.	CL*, CL-ML, SC, SC-SM	A-6*, A-4	0	0	90-100	80-100	75-95	40-70	10-50	NP-30
	13-33	Clay loam*, loam, sandy clay loam.	CL*, SC, SC-SM, CL-ML	A-6*, A-4	0	0-1	90-100	80-100	75-95	40-80	20-50	5-30
	33-63	Fine sandy loam*, sandy loam, loam.	SC-SM*, SM, ML, CL-ML	A-4*	0-1	0-3	90-100	80-98	65-90	40-70	15-30	NP-15
	63-90	Loamy sand*, sandy loam.	SC-SM*, SC, SP-SM, SM	A-2-4*, A-4	0	0	80-100	78-98	55-85	10-40	17-27	NP-10
	90-100	Fine sandy loam*, loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
Metea-----	0-7	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	95-98	75-90	10-25	0-0	NP
	7-28	Loamy sand*, loamy fine sand, sand.	SM*, SP-SM	A-2-4*	0	0	100	85-98	75-90	0-25	0-0	NP
	28-32	Sandy loam*, fine sandy loam, sandy clay loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-2-4	0	0	90-100	75-100	55-95	25-60	10-60	NP-20
	32-44	Clay loam*, loam	CL*, CL-ML	A-6*, A-4	0	0-1	95-100	90-100	85-95	55-80	20-50	5-30
	44-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
UmfD: Urban land.												
Riddles-----	0-5	Fine sandy loam*	SC-SM*, SM	A-4*	0	0	95-100	80-100	75-90	40-55	15-30	NP-10
	5-13	Sandy clay loam*, loam, fine sandy loam.	CL*, CL-ML, SC, SC-SM	A-6*, A-4	0	0	90-100	80-100	75-95	40-70	10-50	NP-30
	13-33	Clay loam*, loam, sandy clay loam.	CL*, SC, SC-SM, CL-ML	A-6*, A-4	0	0-1	90-100	80-100	75-95	40-80	20-50	5-30
	33-63	Fine sandy loam*, sandy loam, loam.	SC-SM*, SM, ML, CL-ML	A-4*	0-1	0-3	90-100	80-98	65-90	40-70	15-30	NP-15
	63-90	Loamy sand*, sandy loam.	SC-SM*, SC, SP-SM, SM	A-2-4*, A-4	0	0	80-100	78-98	55-85	10-40	17-27	NP-10
	90-100	Fine sandy loam*, loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15
Metea-----	0-7	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	100	95-98	75-90	10-25	0-0	NP
	7-28	Loamy sand*, loamy fine sand, sand.	SM*, SP-SM	A-2-4*	0	0	100	85-98	75-90	0-25	0-0	NP
	28-32	Sandy loam*, fine sandy loam, sandy clay loam.	SC-SM*, SC, CL-ML, CL	A-4*, A-2-4	0	0	90-100	75-100	55-95	25-60	10-60	NP-20
	32-44	Clay loam*, loam	CL*, CL-ML	A-6*, A-4	0	0-1	95-100	90-100	85-95	55-80	20-50	5-30
	44-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UmpA: Urban land.												
Schoolcraft-----	0-14	Loam*-----	CL*, CL-ML	A-4*	0	0	95-100	85-100	70-95	50-75	20-30	5-10
	14-29	Sandy clay loam*, clay loam, loam.	CL*, SC	A-6*, A-7	0	0	90-100	85-100	70-95	35-75	25-45	10-20
	29-39	Gravelly sandy loam*, gravelly loamy sand, gravelly sandy clay loam.	SC-SM*, SM	A-2-4*	0	0	65-100	55-80	30-70	10-35	10-40	NP-20
	39-77	Sand*, fine sand, loamy sand.	SP-SM*, SM, SP	A-2-4*, A-3	0	0	90-100	85-100	55-85	0-25	0-0	NP
	77-95	Gravelly coarse sand*, coarse sand, sand.	SW-SM*, GP, SP-SM, SW	A-1-a*, A-1-B	0	0-5	45-90	35-85	15-40	0-10	0-0	NP
UmuA: Urban land.												
Southwest-----	0-10	Silt loam*-----	CL*, ML	A-6*, A-4	0	0	100	100	95-100	75-100	27-39	3-15
	10-23	Silty clay loam*, silt loam.	CL*, ML	A-6*, A-4	0	0	100	100	95-100	75-100	27-39	3-15
	23-34	Silty clay loam*, silt loam, loam.	CL*, CL-ML, ML	A-6*, A-4	0	0	95-100	92-100	85-100	50-100	20-45	3-33
	34-45	Silty clay loam*, silt loam, loam.	CL*, CL-ML, ML	A-6*, A-4, A-7-6	0	0	95-100	92-100	85-100	50-100	20-45	3-33
	45-75	Silty clay loam*, silt loam.	CL*, CL-ML, ML	A-6*, A-4, A-7-6	0	0	95-100	92-100	85-100	65-100	25-45	3-28
	75-80	Silt loam*, loam, clay loam.	CL*, CL-ML, ML	A-6*, A-7-6, A-4	0	0-1	95-100	92-100	75-100	50-100	20-45	NP-24
UmwA: Urban land.												
Tracy-----	0-9	Sandy loam*-----	SC-SM*, SM, SC	A-2-4*, A-4	0	0	80-100	75-98	60-80	25-40	0-25	NP-10
	9-47	Sandy loam*, loam.	SC-SM*, CL, ML, SM	A-4*, A-6	0	0	85-100	75-98	55-90	25-60	10-40	NP-20
	47-60	Gravelly sandy clay loam*, gravelly loamy sand.	SC*, SC-SM, SM, SP-SM	A-6*, A-4, A-2-4	0	0-1	60-90	50-75	30-70	10-60	0-40	NP-20
	60-86	Stratified loamy sand to gravelly sand*.	SM*, SP-SM	A-3*, A-1-B, A-2-4	0-1	0-3	65-100	50-98	15-85	0-25	0-0	NP
UmwB: Urban land.												
Tracy-----	0-9	Sandy loam*-----	SC-SM*, SM, SC	A-2-4*, A-4	0	0	80-100	75-98	60-80	25-40	0-25	NP-10
	9-47	Sandy loam*, loam.	SC-SM*, CL, ML, SM	A-4*, A-6	0	0	85-100	75-98	55-90	25-60	10-40	NP-20
	47-60	Gravelly sandy clay loam*, gravelly loamy sand.	SC*, SC-SM, SM, SP-SM	A-6*, A-4, A-2-4	0	0-1	60-90	50-75	30-70	10-60	0-40	NP-20
	60-86	Stratified loamy sand to gravelly sand*.	SM*, SP-SM	A-3*, A-1-B, A-2-4	0-1	0-3	65-100	50-98	15-85	0-25	0-0	NP

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UmwC: Urban land.												
Tracy-----	0-5	Sandy loam*-----	SC-SM*, SM, SC	A-2-4*, A-4	0	0	80-100	75-98	60-80	25-40	0-25	NP-10
	5-47	Sandy loam*, loam.	SC-SM*, CL, ML, SM	A-4*, A-6	0	0	85-100	75-98	55-90	25-60	10-40	NP-20
	47-60	Gravelly sandy clay loam*, gravelly loamy sand.	SC*, SC-SM, SM, SP-SM	A-6*, A-4, A-2-4	0	0-1	60-90	50-75	30-70	10-60	0-40	NP-20
	60-86	Stratified loamy sand to gravelly sand*.	SM*, SP-SM	A-3*, A-1-B, A-2-4	0-1	0-3	65-100	50-98	15-85	0-25	0-0	NP
UmwD: Urban land.												
Tracy-----	0-9	Sandy loam*-----	SC-SM*, SM, SC	A-2-4*, A-4	0	0	80-100	75-98	60-80	25-40	0-25	NP-10
	9-47	Sandy loam*, loam.	SC-SM*, CL, ML, SM	A-4*, A-6	0	0	85-100	75-98	55-90	25-60	10-40	NP-20
	47-60	Gravelly sandy clay loam*, gravelly loamy sand.	SC*, SC-SM, SM, SP-SM	A-6*, A-4, A-2-4	0	0-1	60-90	50-75	30-70	10-60	0-40	NP-20
	60-86	Stratified loamy sand to gravelly sand*.	SM*, SP-SM	A-3*, A-1-B, A-2-4	0-1	0-3	65-100	50-98	15-85	0-25	0-0	NP
UmxA: Urban land.												
Troxel-----	0-50	Silt loam*-----	CL*, CL-ML	A-6*, A-4	0	0	100	100	90-100	75-90	25-40	5-15
	50-70	Clay loam*-----	CL*, CL-ML	A-6*, A-4	0	0	95-100	90-100	80-100	55-100	20-60	5-35
	70-91	Sandy loam*, loam.	SC-SM*, CL, CL-ML, SC	A-4*, A-2-4, A-6	0	0-1	85-100	75-98	55-90	25-60	10-40	NP-20
UnoA: Urban land.												
Whitaker-----	0-17	Loam*-----	CL-ML*, CL	A-4*, A-6	0	0	90-100	90-98	75-85	55-65	20-40	5-20
	17-39	Clay loam*, sandy clay loam.	CL*, CL-ML	A-6*, A-4	0	0	95-100	90-100	80-95	40-75	20-60	5-30
	39-48	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10
	48-86	Stratified loamy sand to silt loam*.	SM*, CL-ML, ML, SP-SM	A-4*, A-2-4	0	0	85-100	75-98	55-95	10-85	0-40	NP-15
UnqB: Urban land.												
Williamstown----	0-7	Loam*-----	CL*, CL-ML, ML	A-4*, A-6	0	0	95-100	85-100	85-100	55-85	15-40	NP-15
	7-34	Clay loam*, loam	CL*, CL-ML	A-6*, A-7	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	34-39	Loam*, fine sandy loam.	CL*, ML, SM, SC	A-6*, A-4	0	0	90-100	85-98	65-95	40-70	15-40	NP-25
	39-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SM, SC	A-4*, A-6	0	0-2	90-100	85-98	65-90	40-70	15-35	NP-20

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
UnqB: Crosier-----	0-11	Loam*-----	CL-ML*, CL, ML	A-4*, A-6	0-1	0-1	95-100	90-100	85-95	55-90	20-40	NP-17
	11-30	Clay loam*, loam, sandy clay loam.	CL*, SC	A-6*, A-7-6	0-1	0-1	95-100	90-100	75-95	45-80	25-50	12-30
	30-38	Loam*, sandy loam, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-95	40-70	15-40	NP-22
	38-80	Loam*, sandy loam, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15
UntA: Urban land.												
Wunabuna, drained-----	0-21	Silt loam*-----	CL*, ML	A-6*, A-4	0	0	100	100	95-100	75-100	26-39	2-15
	21-32	Silty clay loam*, silt loam.	CL*, CL-ML, ML	A-6*, A-4, A-7-6	0	0	100	100	95-100	75-100	26-46	4-24
	32-38	Silty clay*, silty clay loam, silt loam.	CL*, CL-ML, ML	A-7-6*, A-4, A-6	0	0	100	100	95-100	75-100	26-46	4-24
	38-80	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
Usl: Udorthents, rubbish.												
W: Water.												
WcnAI: Waterford-----	0-8	Loam*-----	CL-ML*, CL	A-4*, A-6	0	0	95-100	90-100	80-100	50-80	20-35	5-15
	8-41	Fine sandy loam*, sandy loam, loam, sandy clay loam.	CL-ML*, CL, SC, SC-SM	A-4*, A-2-4	0	0	95-100	90-100	75-100	25-80	14-35	NP-10
	41-46	Loamy sand*, sand, coarse sand.	SM*, SP-SM, SW, SW-SM	A-2*, A-1-B, A-2-4	0	0	80-100	80-100	15-90	0-30	0-0	NP
	46-50	Loamy sand*-----	SM*, SP, SP-SM	A-2*, A-1-B, A-2-4, A-3	0	0	80-100	80-100	40-95	0-25	0-0	NP
	50-80	Gravelly coarse sand*, very gravelly coarse sand.	GP-GM*, SM, SP, SP-SM, SW, SW-SM	A-1-a*, A-1-B	0-1	0-3	45-85	45-75	10-40	0-25	0-0	NP
WoaA: Williamstown----	0-7	Loam*-----	CL*, CL-ML, ML	A-4*, A-6	0	0	95-100	85-100	85-100	55-85	15-40	NP-15
	7-34	Clay loam*, loam	CL*, CL-ML	A-6*, A-7	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	34-39	Loam*, fine sandy loam.	CL*, ML, SM, SC	A-6*, A-4	0	0	90-100	85-98	65-95	40-70	15-40	NP-25
	39-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SM, SC	A-4*, A-6	0	0-2	90-100	85-98	65-90	40-70	15-35	NP-20

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
WoaB2:												
Williamstown----	0-5	Loam*-----	CL*, CL-ML, ML	A-4*, A-6	0	0	95-100	85-100	85-100	55-85	15-40	NP-15
	5-34	Clay loam*, loam	CL*, CL-ML	A-6*, A-7	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	34-39	Loam*, fine sandy loam.	CL*, ML, SM, SC	A-6*, A-4	0	0	90-100	85-98	65-95	40-70	15-40	NP-25
	39-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SM, SC	A-4*, A-6	0	0-2	90-100	85-98	65-90	40-70	15-35	NP-20
WoaC2:												
Williamstown----	0-5	Loam*-----	CL*, CL-ML, ML	A-4*, A-6	0	0	95-100	85-100	85-100	55-85	15-40	NP-15
	5-34	Clay loam*, loam	CL*, CL-ML	A-6*, A-7	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	34-39	Loam*, fine sandy loam.	CL*, ML, SM, SC	A-6*, A-4	0	0	90-100	85-98	65-95	40-70	15-40	NP-25
	39-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SM, SC	A-4*, A-6	0	0-2	90-100	85-98	65-90	40-70	15-35	NP-20
WobB:												
Williamstown----	0-7	Loam*-----	CL*, CL-ML, ML	A-4*, A-6	0	0	95-100	85-100	85-100	55-85	15-40	NP-15
	7-34	Clay loam*, loam	CL*, CL-ML	A-6*, A-7	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	34-39	Loam*, fine sandy loam.	CL*, ML, SM, SC	A-6*, A-4	0	0	90-100	85-98	65-95	40-70	15-40	NP-25
	39-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SM, SC	A-4*, A-6	0	0-2	90-100	85-98	65-90	40-70	15-35	NP-20
Crosier-----	0-11	Loam*-----	CL-ML*, CL, ML	A-4*, A-6	0-1	0-1	95-100	90-100	85-95	55-90	20-40	NP-17
	11-30	Clay loam*, loam, sandy clay loam.	CL*, SC	A-6*, A-7-6	0-1	0-1	95-100	90-100	75-95	45-80	25-50	12-30
	30-38	Loam*, sandy loam, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-95	40-70	15-40	NP-22
	38-80	Loam*, sandy loam, fine sandy loam.	CL-ML*, CL, ML, SC	A-4*, A-6	0-1	0-3	90-100	85-100	65-90	40-70	15-30	NP-15
WrxAN:												
Wunabuna, drained-----	0-21	Silt loam*-----	CL*, ML	A-6*, A-4	0	0	100	100	95-100	75-100	26-39	2-15
	21-32	Silty clay loam*, silt loam.	CL*, CL-ML, ML	A-6*, A-4, A-7-6	0	0	100	100	95-100	75-100	26-46	4-24
	32-38	Silty clay*, silty clay loam, silt loam.	CL*, CL-ML, ML	A-7-6*, A-4, A-6	0	0	100	100	95-100	75-100	26-46	4-24
	38-80	Muck*-----	PT*	A-8*	0	0	100	100	100	100	---	---
WtbA:												
Whitaker-----	0-17	Loam*-----	CL-ML*, CL	A-4*, A-6	0	0	90-100	90-98	75-85	55-65	20-40	5-20
	17-39	Clay loam*, sandy clay loam.	CL*, CL-ML	A-6*, A-4	0	0	95-100	90-100	80-95	40-75	20-60	5-30
	39-48	Sandy loam*-----	SM*, SC, SC-SM	A-2-4*	0	0-1	90-100	75-98	55-85	25-40	15-25	NP-10
	48-86	Stratified loamy sand to silt loam*.	SM*, CL-ML, ML, SP-SM	A-4*, A-2-4	0	0	85-100	75-98	55-95	10-85	0-40	NP-15

Table 16.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10	3-10						
					inches	inches	4	10	40	200		
	In				Pct	Pct					Pct	
WujB: Williamstown----	0-7	Loam*-----	CL*, CL-ML, ML	A-4*, A-6	0	0	95-100	85-100	85-100	55-85	15-40	NP-15
	7-34	Clay loam*, loam	CL*, CL-ML	A-6*, A-7	0	0	90-100	90-100	85-95	55-80	20-50	5-30
	34-39	Loam*, fine sandy loam.	CL* , ML, SM, SC	A-6*, A-4	0	0	90-100	85-98	65-95	40-70	15-40	NP-25
	39-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SM, SC	A-4*, A-6	0	0-2	90-100	85-98	65-90	40-70	15-35	NP-20
Moon-----	0-9	Loamy sand*-----	SM*, SP-SM	A-2-4*	0	0	85-100	75-100	55-90	10-25	0-0	NP
	9-23	Loamy sand*, loamy fine sand, sand.	SM*, SP-SM	A-2-4*	0	0	85-100	75-100	55-90	0-25	0-0	NP
	23-35	Sandy clay loam*, sandy loam.	CL*, SC, SC-SM	A-6*, A-4	0	0	90-100	75-100	55-95	25-60	10-60	NP-20
	35-45	Loam*, clay loam	CL*, CL-ML	A-4*, A-6	0	0-1	95-100	90-100	85-95	55-80	20-50	5-30
	45-80	Loam*, fine sandy loam.	CL-ML*, CL, ML, SC, SM	A-4*, A-6	0-1	0-3	90-100	85-98	65-90	40-70	15-30	NP-15

Table 17a.--Physical Properties of the Soils

(Absence of an entry indicates that data were not estimated. Properties are listed as low, representative, and high values separated by a hyphen. Low and high values reflect the normally expected range. Representative values are indicative of conditions that occur most commonly.)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>AahAK:</b>									
Absecon-----	0-5	70-80-90	0-11-30	2-9-15	1.30-1.45-1.60	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.8-3.0
	5-14	70-80-90	0-12-25	0-8-10	1.35-1.48-1.60	6.00-13.00-20.00	0.05-0.08-0.11	0.00-1.50-2.90	0.5-0.8-1.0
	14-60	85-90-100	0-5-10	0-5-10	1.45-1.53-1.60	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.0-0.0
<b>AatAN:</b>									
Ackerman, drained-----	0-8	0-0-10	0-0-10	0-0-10	0.15-0.45-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	8-14	0-0-10	0-0-10	0-0-10	0.30-1.00-1.50	0.06-0.13-0.20	0.18-0.21-0.24	3.00-4.50-5.90	20-35 -60
	14-80	75-90-98	0-7-25	0-3-10	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.3-1.0
<b>AbhAN:</b>									
Adrian, drained-----	0-9	0-0-10	0-0-10	0-0-10	0.15-0.45-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	9-34	0-0-10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	34-80	75-89-98	0-6-25	0-5-10	1.40-1.58-1.75	6.00-13.00-20.00	0.03-0.06-0.08	0.00-1.50-2.90	0.0-0.3-1.0
<b>AbhAU:</b>									
Adrian, undrained----	0-34	0-0-10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	34-80	75-89-98	0-6-25	0-5-10	1.40-1.58-1.75	6.00-13.00-20.00	0.03-0.06-0.08	0.00-1.50-2.90	0.0-0.3-1.0
<b>ApuAN:</b>									
Antung, drained-----	0-9	0-0-10	0-0-10	0-0-10	0.15-0.45-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	9-12	0-0-10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	12-80	75-94-98	0-4-10	0-2-10	1.40-1.58-1.75	6.00-13.00-20.00	0.03-0.06-0.08	0.00-1.50-2.90	0.0-0.3-1.0
<b>AxvA:</b>									
Auten-----	0-9	30-33-52	30-49-50	11-18-22	1.30-1.45-1.60	0.60-1.30-2.00	0.20-0.21-0.22	0.00-1.50-2.90	2.0-3.0-4.0
	9-22	30-40-70	10-30-50	18-30-34	1.40-1.55-1.70	0.60-1.30-2.00	0.12-0.16-0.19	3.00-4.50-5.90	0.0-0.5-1.0
	22-80	75-85-100	0-8-20	1-7-10	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>BaaA:</b>									
Bainter-----	0-9	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	9-13	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	13-31	45-70-90	5-16-50	10-14-18	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.12-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	31-44	45-78-85	5-5-50	10-17-22	1.25-1.48-1.70	2.00-4.00-6.00	0.05-0.11-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	44-54	45-70-80	5-5-50	20-25-30	1.40-1.50-1.60	0.60-1.30-2.00	0.10-0.16-0.21	3.00-4.50-5.90	0.0-0.8-1.0
	54-80	85-91-100	0-7-15	0-2-10	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>BaaB:</b>									
Bainter-----	0-9	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	9-13	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	13-31	45-70-90	5-16-50	10-14-18	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.12-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	31-44	45-78-85	5-5-50	10-17-22	1.25-1.48-1.70	2.00-4.00-6.00	0.05-0.11-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	44-54	45-70-80	5-5-50	20-25-30	1.40-1.50-1.60	0.60-1.30-2.00	0.10-0.16-0.21	3.00-4.50-5.90	0.0-0.8-1.0
	54-80	85-91-100	0-7-15	0-2-10	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>BaaC2:</b>									
Bainter-----	0-5	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	5-13	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	13-31	45-70-90	5-16-50	10-14-18	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.12-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	31-44	45-78-85	5-5-50	10-17-22	1.25-1.48-1.70	2.00-4.00-6.00	0.05-0.11-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	44-54	45-70-80	5-5-50	20-25-30	1.40-1.50-1.60	0.60-1.30-2.00	0.10-0.16-0.21	3.00-4.50-5.90	0.0-0.8-1.0
	54-80	85-91-100	0-7-15	0-2-10	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5



Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>BbmA:</b>									
Baugo-----	0-11	10-20-52	50-60-80	10-20-27	1.20-1.43-1.65	0.60-1.30-2.00	0.17-0.22-0.26	0.00-1.50-2.90	1.0-2.0-3.0
	11-29	10-17-50	45-52-70	27-31-36	1.40-1.55-1.70	0.60-1.30-2.00	0.07-0.14-0.21	3.00-4.50-5.90	0.0-0.5-1.0
	29-36	10-28-52	10-52-80	10-20-27	1.40-1.55-1.70	0.60-1.30-2.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.2-0.5
	36-56	85-90-100	0-5-20	0-5-10	1.60-1.70-1.80	6.00-13.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.1-0.2
	56-80	30-50-85	10-30-50	10-20-27	1.75-1.85-2.00	0.06-0.13-0.20	0.01-0.02-0.03	0.00-1.50-2.90	0.0-0.2-0.5
<b>BmgA:</b>									
Blount-----	0-7	5-23-35	50-57-80	10-20-26	1.35-1.45-1.55	0.60-1.30-2.00	0.20-0.22-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	7-23	5-30-45	25-33-70	35-37-50	1.40-1.55-1.70	0.06-0.13-0.20	0.12-0.16-0.19	3.00-4.50-5.90	0.0-0.5-1.0
	23-42	5-30-45	25-35-70	30-35-40	1.50-1.60-1.70	0.06-0.13-0.20	0.12-0.16-0.19	3.00-4.50-5.90	0.0-0.2-0.5
	42-80	5-30-45	25-39-70	27-31-35	1.75-1.85-2.00	0.01-0.10-0.20	0.07-0.09-0.10	3.00-4.50-5.90	0.0-0.2-0.5
<b>BshA:</b>									
Brady-----	0-9	52-62-80	5-28-35	2-10-15	1.35-1.45-1.55	2.00-4.00-6.00	0.12-0.14-0.16	0.00-1.50-2.90	2.0-3.0-4.0
	9-37	50-65-80	5-20-35	5-15-22	1.35-1.45-1.55	2.00-4.00-6.00	0.12-0.15-0.17	0.00-1.50-2.90	0.0-0.0-0.0
	37-56	52-80-85	5-13-35	5-7-20	1.35-1.43-1.50	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.0-0.0
	56-80	90-93-99	1-5-10	0-2-10	1.40-1.45-1.50	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.0-0.0
<b>BsxA:</b>									
Brems-----	0-9	70-81-90	0-13-15	1-6-12	1.50-1.58-1.65	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	9-27	70-81-90	0-13-15	1-6-12	1.50-1.58-1.65	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.2-0.5-1.0
	27-72	75-88-98	0-5-15	1-4-10	1.60-1.68-1.75	6.00-13.00-20.00	0.05-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	72-80	75-88-98	0-8-15	1-4-6	1.60-1.68-1.75	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>Morocco-----</b>	0-9	70-85-90	1-10-15	1-5-6	1.40-1.50-1.60	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.2-2.0
	9-60	70-94-100	0-3-15	1-3-10	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.08-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	60-80	85-97-100	0-1-10	1-2-6	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>BteA:</b>									
Brems-----	0-9	70-81-90	0-13-15	1-6-12	1.50-1.58-1.65	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	9-27	70-81-90	0-13-15	1-6-12	1.50-1.58-1.65	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.2-0.5-1.0
	27-72	75-88-98	0-8-15	1-4-10	1.60-1.68-1.75	6.00-13.00-20.00	0.05-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	72-80	75-88-98	0-8-15	1-4-6	1.60-1.68-1.75	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>BuuA:</b>									
Brookston----	0-9	30-40-50	30-40-50	14-20-27	1.35-1.43-1.50	0.60-1.30-2.00	0.20-0.21-0.22	0.00-1.50-2.90	3.0-4.0-5.0
	9-48	20-35-60	20-35-60	25-30-35	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.5-1.2-2.0
	48-68	30-41-60	30-40-50	12-19-25	1.60-1.70-1.75	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.2-0.5
	68-80	30-45-60	30-40-50	10-15-20	1.60-1.70-1.75	0.20-0.40-0.60	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>CmbAI:</b>									
Cohoctah-----	0-13	30-45-52	30-40-50	7-15-20	1.30-1.45-1.60	2.00-4.00-6.00	0.20-0.21-0.22	0.00-1.50-2.90	3.0-4.5-6.0
	13-56	40-53-70	10-32-40	5-15-25	1.50-1.60-1.70	2.00-4.00-6.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-1.2-2.0
	56-80	85-90-98	2-6-8	0-4-10	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>CnbA:</b>									
Coloma-----	0-12	70-91-100	0-5-10	0-4-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.07-0.09	0.00-1.50-2.90	0.5-1.2-2.0
	12-47	70-92-100	0-5-25	0-3-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.09-0.12	0.00-1.50-2.90	0.0-0.2-0.5
	47-80	70-93-100	0-2-25	2-5-12	1.50-1.58-1.65	2.00-11.00-20.00	0.03-0.06-0.08	0.00-1.50-2.90	0.0-0.2-0.5
<b>CnbB:</b>									
Coloma-----	0-12	85-91-100	0-5-10	0-4-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.07-0.09	0.00-1.50-2.90	0.5-1.2-2.0
	12-47	70-92-100	0-5-25	0-3-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.09-0.12	0.00-1.50-2.90	0.0-0.2-0.5
	47-80	70-93-100	0-2-25	2-5-12	1.50-1.58-1.65	2.00-11.00-20.00	0.03-0.06-0.08	0.00-1.50-2.90	0.0-0.2-0.5
<b>CnbC:</b>									
Coloma-----	0-12	85-91-100	0-5-10	0-4-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.07-0.09	0.00-1.50-2.90	0.5-1.2-2.0
	12-47	70-92-100	0-5-25	0-3-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.09-0.12	0.00-1.50-2.90	0.0-0.2-0.5
	47-80	70-93-100	0-3-25	2-5-12	1.50-1.58-1.65	2.00-11.00-20.00	0.03-0.06-0.08	0.00-1.50-2.90	0.0-0.2-0.5

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>CnbD:</b>									
Coloma-----	0-12	85-91-100	0-5-10	0-4-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.07-0.09	0.00-1.50-2.90	0.5-1.2-2.0
	12-47	70-92-100	0-5-25	0-3-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.09-0.12	0.00-1.50-2.90	0.0-0.2-0.5
	47-80	70-93-100	0-2-25	2-5-12	1.50-1.58-1.65	2.00-11.00-20.00	0.03-0.06-0.08	0.00-1.50-2.90	0.0-0.2-0.5
<b>CrrA:</b>									
Coupee-----	0-21	8-15-20	50-60-70	20-25-27	1.30-1.45-1.60	0.60-1.30-2.00	0.22-0.23-0.24	0.00-1.50-2.90	2.0-3.0-4.0
	21-33	30-35-60	20-37-50	20-28-35	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.14-0.16	3.00-4.50-5.90	0.5-0.8-1.0
	33-52	70-88-100	0-6-30	3-6-10	1.50-1.60-1.70	6.00-13.00-20.00	0.06-0.09-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	52-98	87-90-100	0-6-10	2-4-6	1.50-1.60-1.70	20.00-20.00-20.00	0.04-0.05-0.06	0.00-1.50-2.90	0.0-0.2-0.5
<b>CvdA:</b>									
Crosier-----	0-11	25-45-50	30-40-50	5-15-25	1.20-1.43-1.65	0.60-1.30-2.00	0.16-0.17-0.19	0.00-1.50-2.90	1.0-2.0-3.0
	11-30	25-40-70	5-32-50	20-28-34	1.40-1.55-1.70	0.20-0.40-0.60	0.12-0.16-0.19	3.00-4.50-5.90	0.0-0.5-1.0
	30-38	30-45-60	5-40-50	12-15-25	1.60-1.70-1.80	0.20-0.40-0.60	0.12-0.14-0.16	0.00-1.50-2.90	0.0-0.2-0.5
	38-80	30-45-60	5-40-50	10-15-20	1.75-1.80-2.00	0.06-0.13-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>CvdB:</b>									
Crosier-----	0-11	25-45-50	30-40-50	5-15-25	1.20-1.43-1.65	0.60-1.30-2.00	0.16-0.17-0.19	0.00-1.50-2.90	1.0-2.0-3.0
	11-30	25-40-70	5-32-50	20-28-34	1.40-1.55-1.70	0.20-0.40-0.60	0.12-0.16-0.19	3.00-4.50-5.90	0.0-0.5-1.0
	30-38	30-45-60	5-40-50	12-15-25	1.60-1.70-1.80	0.20-0.40-0.60	0.12-0.14-0.16	0.00-1.50-2.90	0.0-0.2-0.5
	38-80	30-45-60	5-40-50	10-15-20	1.75-1.80-2.00	0.06-0.13-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>CwkA:</b>									
Crumstown-----	0-9	50-72-80	2-18-50	5-10-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	9-19	50-72-80	2-14-50	7-14-15	1.60-1.70-1.80	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	19-45	70-84-100	0-8-25	3-8-10	1.50-1.60-1.70	6.00-13.00-20.00	0.06-0.08-0.11	0.00-1.50-2.90	0.5-0.8-1.0
	45-100	70-92-100	0-3-25	1-5-10	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.08-0.11	0.00-1.50-2.90	0.0-0.2-0.5
<b>CwkB:</b>									
Crumstown-----	0-9	50-72-80	2-18-50	5-10-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	9-19	50-72-80	2-14-50	7-14-15	1.60-1.70-1.80	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	19-45	70-84-100	0-8-25	3-8-10	1.50-1.60-1.70	6.00-13.00-20.00	0.06-0.08-0.11	0.00-1.50-2.90	0.5-0.8-1.0
	45-100	70-92-100	0-3-25	1-5-10	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.08-0.11	0.00-1.50-2.90	0.0-0.2-0.5
<b>DcrA:</b>									
Del Rey-----	0-9	0-12-20	45-58-70	27-30-40	1.30-1.40-1.50	0.60-1.30-2.00	0.22-0.23-0.24	0.00-1.50-2.90	2.0-2.5-3.0
	9-33	0-10-20	40-50-70	35-40-50	1.40-1.53-1.65	0.06-0.13-0.20	0.12-0.16-0.20	3.00-4.50-5.90	0.0-0.5-1.0
	33-90	0-15-40	40-55-80	10-30-40	1.50-1.60-1.75	0.06-0.13-0.20	0.09-0.10-0.11	3.00-4.50-5.90	0.0-0.2-0.5
<b>EchAN:</b>									
Edwards, drained-----	0-9	0-0 -10	0-0-10	0-0-10	0.15-0.45-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	9-24	0-0 -10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	24-80	10-17-35	50-65-80	10-18-25	0.30-1.00-1.50	0.06-0.13-0.20	0.00-0.00-0.00	0.00-1.50-2.90	0.0-10 -20
<b>EchAU:</b>									
Edwards, undrained----	0-24	0-0 -10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	24-80	10-17-35	50-65-80	10-18-25	0.30-1.00-1.50	0.06-0.13-0.20	0.00-0.00-0.00	0.00-1.50-2.90	0.0-10 -20
<b>EcrAN:</b>									
Edselton, drained-----	0-10	0-0 -10	0-0-10	0-0-10	0.15-0.45-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	10-21	0-0 -10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	21-48	10-17-35	50-65-80	10-18-25	0.30-1.00-1.50	0.06-0.13-0.20	0.00-0.00-0.00	0.00-1.50-2.90	0.0-10 -20
	48-80	75-94-98	0-4-25	0-2-10	1.40-1.58-1.75	6.00-13.00-20.00	0.03-0.06-0.08	0.00-1.50-2.90	0.0-0.3-1.0
<b>EcrAU:</b>									
Edselton, undrained----	0-21	0-0 -10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	21-48	10-17-35	50-65-80	10-18-25	0.30-1.00-1.50	0.06-0.13-0.20	0.00-0.00-0.00	0.00-1.50-2.90	0.0-10 -20
	48-80	75-94-98	0-4-25	0-2-10	1.40-1.58-1.75	6.00-13.00-20.00	0.03-0.06-0.08	0.00-1.50-2.90	0.0-0.3-1.0

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>EmeA:</b>									
<b>Elston-----</b>	0-20	50-65-85	5-25-50	8-10-15	1.40-1.50-1.60	2.00-4.00-6.00	0.12-0.16-0.20	0.00-1.50-2.90	2.0-3.0-4.0
	20-34	50-55-85	5-31-50	10-14-18	1.40-1.50-1.60	2.00-4.00-6.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-1.2-2.0
	34-72	50-80-90	0-13-25	4-7-10	1.50-1.60-1.70	6.00-13.00-20.00	0.08-0.11-0.13	0.00-1.50-2.90	0.5-0.8-1.0
	72-80	87-91-100	0-6-10	1-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>GczA:</b>									
<b>Gilford-----</b>	0-14	50-70-80	10-15-45	10-15-20	1.40-1.55-1.70	2.00-4.00-6.00	0.13-0.14-0.15	0.00-1.50-2.90	2.0-3.0-4.0
	14-32	50-70-80	10-16-45	8-14-20	1.50-1.60-1.70	2.00-4.00-6.00	0.12-0.14-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	32-38	70-85-95	0-8-30	3-7-12	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.08-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	38-80	75-89-98	0-6-25	1-5-10	1.60-1.70-1.80	6.00-13.00-20.00	0.02-0.05-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>GdnA:</b>									
<b>Gilford-----</b>	0-14	50-70-80	10-15-45	10-15-20	1.40-1.55-1.70	2.00-4.00-6.00	0.15-0.18-0.21	0.00-1.50-2.90	10-12 -15
	14-32	50-70-80	10-16-45	8-14-20	1.50-1.60-1.70	2.00-4.00-6.00	0.12-0.14-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	32-38	70-85-95	0-8-30	3-7-12	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.08-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	38-80	75-89-98	0-6-25	1-5-10	1.60-1.70-1.80	6.00-13.00-20.00	0.02-0.05-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>HfbAN:</b>									
<b>Henrietta, drained-----</b>	0-12	0-0 -10	0-0-10	0-0-10	0.15-0.45-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	12-43	30-64-100	0-28-60	5-8-18	1.45-1.63-1.80	0.57-1.28-1.98	0.09-0.16-0.22	0.00-1.50-2.90	0.0-0.2-0.5
	43-60	30-64-100	0-28-60	5-8-18	1.45-1.63-1.80	0.57-1.28-1.98	0.08-0.15-0.22	0.00-1.50-2.90	0.0-0.2-0.5
<b>HfbAU:</b>									
<b>Henrietta, undrained----</b>	0-12	0-0 -10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	12-43	30-64-100	0-28-60	5-8-18	1.45-1.63-1.80	0.57-1.28-1.98	0.09-0.16-0.22	0.00-1.50-2.90	0.0-0.2-0.5
	43-80	30-64-100	0-28-60	5-8-18	1.45-1.63-1.80	0.57-1.28-1.98	0.08-0.15-0.22	0.00-1.50-2.90	0.0-0.2-0.5
<b>HkkA:</b>									
<b>Hillsdale-----</b>	0-8	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	8-14	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	14-44	50-70-85	5-16-50	10-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	44-84	50-60-85	5-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
<b>HkkB:</b>									
<b>Hillsdale-----</b>	0-8	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	8-14	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	14-44	50-70-85	5-16-50	10-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	44-84	50-60-85	5-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
<b>HknC2:</b>									
<b>Hillsdale-----</b>	0-5	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	5-14	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	14-44	50-70-85	5-16-50	10-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	44-84	50-60-85	5-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
<b>Oshtemo-----</b>	0-6	50-71-90	0-19-50	5-10-20	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	6-14	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>HknD2:</b>									
<b>Hillsdale-----</b>	0-5	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	5-14	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	14-44	50-70-85	5-16-50	10-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	44-84	50-60-85	5-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>HknD2:</b>									
<b>Oshtemo-----</b>	0-6	50-71-90	0-19-50	5-10-20	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	6-14	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>HkpC2:</b>									
<b>Hillsdale-----</b>	0-5	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	5-14	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	14-44	50-70-85	5-16-50	10-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	44-84	50-60-85	5-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
<b>Tracy-----</b>	0-5	50-65-80	5-25-50	8-10-16	1.40-1.55-1.70	0.60-1.30-2.00	0.10-0.16-0.21	0.00-1.50-2.90	1.0-1.5-2.0
	5-47	25-60-80	5-26-50	8-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-60	45-60-90	5-19-30	3-21-24	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	60-86	70-85-100	0-7-30	3-8-8	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5
<b>HkpD2:</b>									
<b>Hillsdale-----</b>	0-5	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	5-14	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	14-44	50-70-85	5-16-50	10-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	44-84	50-60-85	5-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
<b>Tracy-----</b>	0-5	50-65-80	5-25-50	8-10-16	1.40-1.55-1.70	0.60-1.30-2.00	0.10-0.16-0.21	0.00-1.50-2.90	1.0-1.5-2.0
	5-47	25-60-80	5-26-50	8-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-60	45-60-90	5-19-30	3-21-24	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	60-86	70-85-100	0-7-30	3-8-8	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5
<b>HtbAN:</b>									
<b>Houghton, drained-----</b>	0-9	0-0 -10	0-0-10	0-0-10	0.15-0.45-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	9-80	0-0 -10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
<b>HtbAU:</b>									
<b>Houghton, undrained----</b>	0-80	0-0-10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
<b>JaaAK:</b>									
<b>Jamestown-----</b>	0-11	5-21-50	50-60-80	10-19-27	1.20-1.43-1.65	0.60-1.30-2.00	0.17-0.22-0.26	0.00-1.50-2.90	2.0-3.0-4.0
	11-33	5-42-52	30-40-70	18-18-35	1.40-1.50-1.60	0.60-1.30-2.00	0.17-0.20-0.22	0.00-1.50-2.90	0.5-1.2-2.0
	33-44	50-73-80	5-17-40	5-10-20	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.11-0.14	0.00-1.50-2.90	0.5-0.8-1.0
	44-52	50-82-100	0-11-50	1-7-12	1.50-1.63-1.75	6.00-13.00-20.00	0.06-0.11-0.16	0.00-1.50-2.90	0.0-0.2-0.5
	52-80	25-40-80	5-40-50	10-20-27	1.75-1.85-2.00	0.01-0.10-0.20	0.01-0.02-0.03	0.00-1.50-2.90	0.0-0.2-0.5
<b>MfaA:</b>									
<b>Martinsville--</b>	0-13	25-43-52	30-42-50	12-15-20	1.30-1.45-1.60	0.60-1.30-2.00	0.18-0.21-0.24	0.00-1.50-2.90	1.0-1.5-2.0
	13-35	20-35-75	5-35-50	20-30-33	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	35-53	25-60-80	5-15-50	15-25-25	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	53-60	10-65-80	5-25-80	8-10-12	1.60-1.70-1.80	0.60-1.30-2.00	0.08-0.12-0.15	0.00-1.50-2.90	0.0-0.2-0.5
<b>MfaB2:</b>									
<b>Martinsville--</b>	0-5	25-43-52	30-42-50	12-15-20	1.30-1.45-1.60	0.60-1.30-2.00	0.18-0.21-0.24	0.00-1.50-2.90	1.0-1.5-2.0
	5-35	20-35-75	5-35-50	20-30-33	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	35-53	25-60-80	5-15-50	15-25-25	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	53-60	10-65-80	5-25-80	8-10-12	1.60-1.70-1.80	0.60-1.30-2.00	0.08-0.12-0.15	0.00-1.50-2.90	0.0-0.2-0.5
<b>MfaC2:</b>									
<b>Martinsville--</b>	0-5	25-43-52	30-42-50	12-15-20	1.30-1.45-1.60	0.60-1.30-2.00	0.18-0.21-0.24	0.00-1.50-2.90	1.0-1.5-2.0
	5-35	20-35-75	5-35-50	20-30-33	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	35-53	25-60-80	5-15-50	15-25-25	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	53-60	10-65-80	5-25-80	8-10-12	1.60-1.70-1.80	0.60-1.30-2.00	0.08-0.12-0.15	0.00-1.50-2.90	0.0-0.2-0.5

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>MfrAN:</b> <b>Madaus,</b> <b>drained-----</b>	0-9	0-0 -10	0-0-10	0-0-10	0.15-0.45-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	9-48	10-17-35	50-65-80	10-18-25	0.30-1.00-1.50	0.06-0.13-0.20	0.00-0.00-0.00	0.00-1.50-2.90	0.0-10 -20
	48-80	70-94-98	0-4-10	1-2-3	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.3-1.0
<b>MfrAU:</b> <b>Madaus,</b> <b>undrained----</b>	0-9	0-0-10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	9-48	10-17-35	50-65-80	10-18-25	0.30-1.00-1.50	0.06-0.13-0.20	0.00-0.00-0.00	0.00-1.50-2.90	0.0-10 -20
	48-80	70-94-98	0-4-10	1-2-3	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.3-1.0
<b>MgcA:</b> <b>Maumee-----</b>	0-23	70-80-90	0-14-25	2-6-10	1.60-1.68-1.75	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	2.0-3.0-4.0
	23-61	70-91-98	1-6-20	2-3-10	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.08-0.11	0.00-1.50-2.90	0.0-0.5-1.0
	61-80	85-97-100	0-2-15	0-1-10	1.45-1.55-1.65	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.5-1.0
<b>MgdAN:</b> <b>Martisco,</b> <b>drained-----</b>	0-12	0-0 -10	0-0-10	0-0-10	0.15-0.45-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	12-80	10-17-35	50-65-80	10-18-25	0.30-1.00-1.50	0.06-0.13-0.20	0.00-0.00-0.00	0.00-1.50-2.90	0.0-10 -20
<b>MhaA:</b> <b>Maumee-----</b>	0-23	70-80-90	1-13-20	2-7-10	1.50-1.65-1.80	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	2.0-3.0-4.0
	23-61	70-91-98	1-6-20	2-3-10	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.08-0.11	0.00-1.50-2.90	0.0-0.5-1.0
	61-80	85-97-100	0-2-15	0-1-10	1.45-1.55-1.65	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.5-1.0
<b>MhbA:</b> <b>Maumee-----</b>	0-23	70-80-90	1-13-20	2-7-10	1.50-1.65-1.80	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	10-12 -20
	23-61	70-91-98	1-6-20	2-3-10	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.08-0.11	0.00-1.50-2.90	0.0-0.5-1.0
	61-80	85-97-100	0-2-15	0-1-10	1.45-1.55-1.65	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.5-1.0
<b>MmbC2:</b> <b>Miami-----</b>	0-5	25-48-52	30-40-50	7-12-18	1.20-1.43-1.65	0.60-1.30-2.00	0.17-0.22-0.26	0.00-1.50-2.90	1.0-2.0-3.0
	5-31	30-35-60	20-37-50	20-28-35	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.14-0.16	3.00-4.50-5.90	0.5-0.8-1.0
	31-36	30-40-60	30-40-50	15-20-25	1.60-1.70-1.80	0.20-0.40-0.60	0.07-0.12-0.17	0.00-1.50-2.90	0.0-0.2-0.5
	36-80	30-45-60	30-40-50	10-15-20	1.75-1.80-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>MmdC3:</b> <b>Miami-----</b>	0-4	20-35-45	20-34-45	27-31-40	1.30-1.50-1.70	0.60-1.30-2.00	0.17-0.20-0.23	3.00-4.50-5.90	0.5-1.2-2.0
	4-31	30-35-60	20-37-50	20-28-35	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.14-0.16	3.00-4.50-5.90	0.5-0.8-1.0
	31-36	30-40-60	30-40-50	15-20-25	1.60-1.70-1.80	0.20-0.40-0.60	0.07-0.12-0.17	0.00-1.50-2.90	0.0-0.2-0.5
	36-80	30-45-60	30-40-50	10-15-20	1.75-1.80-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>MmdD3:</b> <b>Miami-----</b>	0-4	20-35-45	20-34-45	27-31-40	1.30-1.50-1.70	0.60-1.30-2.00	0.17-0.20-0.23	3.00-4.50-5.90	0.5-1.2-2.0
	4-31	30-35-60	20-37-50	20-28-35	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.14-0.16	3.00-4.50-5.90	0.5-0.8-1.0
	31-36	30-40-60	30-40-50	15-20-25	1.60-1.70-1.80	0.20-0.40-0.60	0.07-0.12-0.17	0.00-1.50-2.90	0.0-0.2-0.5
	36-80	30-45-60	30-40-50	10-15-20	1.75-1.80-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>MouA:</b> <b>Milford-----</b>	0-18	2-10-20	40-55-70	27-35-40	1.10-1.25-1.40	0.60-1.30-2.00	0.21-0.22-0.23	3.00-4.50-5.90	1.0-2.0-3.0
	18-50	2-8 -30	40-52-70	35-40-42	1.40-1.50-1.60	0.20-0.40-0.60	0.11-0.16-0.20	3.00-4.50-5.90	0.5-1.2-2.0
	50-60	2-10-30	40-60-70	20-30-42	1.40-1.60-1.75	0.20-0.40-0.60	0.10-0.16-0.22	3.00-4.50-5.90	0.0-0.5-1.0
<b>MsaA:</b> <b>Mishawaka-----</b>	0-12	50-73-85	5-17-50	5-10-15	1.40-1.55-1.70	2.00-4.00-6.00	0.13-0.15-0.17	0.00-1.50-2.90	2.0-3.0-4.0
	12-18	50-72-85	5-13-50	5-15-15	1.40-1.55-1.70	2.00-4.00-6.00	0.13-0.15-0.17	0.00-1.50-2.90	1.0-2.0-3.0
	18-25	50-81-90	0-11-25	5-8-15	1.45-1.58-1.70	6.00-13.00-20.00	0.09-0.12-0.14	0.00-1.50-2.90	0.5-0.8-1.0
	25-58	87-95-100	0-3-10	0-2-5	1.50-1.63-1.75	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	58-80	87-96-100	0-3-10	0-1-3	1.60-1.73-1.85	6.00-13.00-20.00	0.02-0.05-0.07	0.00-1.50-2.90	0.0-0.2-0.5

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>MtsB2:</b>									
<b>Morley-----</b>	0-5	5-25-40	50-60-80	10-15-26	1.30-1.45-1.60	0.60-1.30-2.00	0.18-0.21-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	5-20	5-15-45	20-47-70	35-38-50	1.40-1.50-1.60	0.20-0.40-0.60	0.11-0.13-0.15	6.00-7.50-8.90	0.5-0.8-1.0
	20-29	5-22-45	20-39-70	35-39-50	1.40-1.50-1.60	0.06-0.33-0.60	0.07-0.10-0.12	6.00-7.50-8.90	0.5-0.8-1.0
	29-80	5-22-45	20-45-70	27-33-35	1.70-1.80-1.90	0.01-0.10-0.20	0.01-0.02-0.02	3.00-4.50-5.90	0.5-0.8-1.0
<b>MtsC2:</b>									
<b>Morley-----</b>	0-5	5-25-40	50-60-80	10-15-26	1.30-1.45-1.60	0.60-1.30-2.00	0.18-0.21-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	5-20	5-15-45	20-47-70	35-38-50	1.40-1.50-1.60	0.20-0.40-0.60	0.11-0.13-0.15	6.00-7.50-8.90	0.5-0.8-1.0
	20-29	5-22-45	20-39-70	35-39-50	1.40-1.50-1.60	0.06-0.33-0.60	0.07-0.10-0.12	6.00-7.50-8.90	0.5-0.8-1.0
	29-80	5-22-45	20-45-70	27-33-35	1.70-1.80-1.90	0.01-0.10-0.20	0.01-0.02-0.02	3.00-4.50-5.90	0.5-0.8-1.0
<b>MubD3:</b>									
<b>Morley-----</b>	0-4	5-15-45	20-47-70	35-38-50	1.40-1.50-1.60	0.20-0.40-0.60	0.11-0.13-0.15	6.00-7.50-8.90	0.5-1.0-2.0
	4-20	5-15-45	20-47-70	35-38-50	1.40-1.50-1.60	0.20-0.40-0.60	0.11-0.13-0.15	6.00-7.50-8.90	0.5-0.8-1.0
	20-29	5-22-45	20-39-70	35-39-50	1.40-1.50-1.60	0.06-0.33-0.60	0.07-0.10-0.12	6.00-7.50-8.90	0.5-0.8-1.0
	29-80	5-22-45	20-45-70	27-33-35	1.70-1.80-1.90	0.01-0.10-0.20	0.01-0.02-0.02	3.00-4.50-5.90	0.5-0.8-1.0
<b>MvhAN:</b>									
<b>Moston,</b>									
<b>drained-----</b>	0-8	0-0-10	0-0-10	0-0-10	0.15-0.45-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	8-24	0-0-10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	24-48	0-0-10	0-0-10	0-0-10	0.30-1.00-1.50	0.06-0.13-0.20	0.18-0.21-0.24	3.00-4.50-5.90	20-35 -60
	48-80	75-94-98	0-4-10	0-2-10	1.40-1.58-1.75	6.00-13.00-20.00	0.02-0.05-0.07	0.00-1.50-2.90	0.0-0.3-1.0
<b>MvhAU:</b>									
<b>Moston,</b>									
<b>undrained----</b>	0-24	0-0-10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	24-48	0-0-10	0-0-10	0-0-10	0.30-1.00-1.50	0.06-0.13-0.20	0.18-0.21-0.24	3.00-4.50-5.90	20-35 -60
	48-80	75-94-98	0-4-10	0-2-10	1.40-1.58-1.75	6.00-13.00-20.00	0.02-0.05-0.07	0.00-1.50-2.90	0.0-0.3-1.0
<b>MvkA:</b>									
<b>Morocco-----</b>	0-9	70-85-90	1-10-15	1-5-6	1.40-1.50-1.60	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.2-2.0
	9-60	70-94-100	0-3-15	1-3-10	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.08-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	60-80	85-97-100	0-1-10	1-2-6	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>MwzAN:</b>									
<b>Muskego,</b>									
<b>drained-----</b>	0-9	0-0-10	0-0-10	0-0-10	0.15-0.45-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	9-27	0-0-10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	27-80	0-0-10	0-0-10	0-0-10	0.30-1.00-1.50	0.06-0.13-0.20	0.18-0.21-0.24	3.00-4.50-5.90	20-35 -60
<b>MwzAU:</b>									
<b>Muskego,</b>									
<b>undrained----</b>	0-27	0-0-10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	---	40-75 -90
	27-80	0-0-10	0-0-10	0-0-10	0.30-1.00-1.50	0.06-0.13-0.20	0.18-0.21-0.24	3.00-4.50-5.90	20-35 -60
<b>OkrA:</b>									
<b>Oshtemo-----</b>	0-9	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>OkrB:</b>									
<b>Oshtemo-----</b>	0-9	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
OkrC2:									
Oshtemo-----	0-6	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	6-14	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-2	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
OkrD:									
Oshtemo-----	0-9	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
OlcA:									
Oshtemo-----	0-9	50-71-90	0-19-50	5-10-20	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
OlcB:									
Oshtemo-----	0-9	50-71-90	0-19-50	5-10-20	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
OlcC2:									
Oshtemo-----	0-6	50-71-90	0-19-50	5-10-20	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	6-14	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>Pxo:</b>									
<b>Psammets.</b>									
<b>QuiA:</b>									
Quinn-----	0-7	30-40-52	30-42-50	11-18-22	1.30-1.45-1.60	0.60-1.30-2.00	0.20-0.21-0.22	0.00-1.50-2.90	2.0-3.0-4.0
	7-47	25-60-80	10-30-50	5-10-20	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-80	75-85-100	0-9-25	2-6-10	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5
<b>QujA:</b>									
Quinn-----	0-7	50-73-85	5-17-40	5-10-20	1.40-1.55-1.70	2.00-4.00-6.00	0.13-0.15-0.17	0.00-1.50-2.90	2.0-3.0-4.0
	7-47	25-60-80	10-30-50	5-10-20	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-80	75-85-100	0-9-25	2-6-10	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5
<b>RenA:</b>									
Rensselaer----	0-15	30-41-50	30-38-50	11-21-27	1.30-1.45-1.60	0.60-1.30-2.00	0.20-0.21-0.22	0.00-1.50-2.90	10-12 -20
	15-38	20-34-60	20-39-60	20-27-35	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.18-0.20	3.00-4.50-5.90	1.0-2.0-3.0
	38-42	20-40-60	20-37-60	15-23-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.5-0.8-1.0
	42-76	30-60-98	0-30-60	5-10-20	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	76-80	30-45-60	30-42-50	10-13-20	1.60-1.70-1.75	0.06-0.13-0.20	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.2-0.5
<b>ReyA:</b>									
Rensselaer----	0-15	30-41-50	30-38-50	11-21-27	1.30-1.45-1.60	0.60-1.30-2.00	0.20-0.21-0.22	0.00-1.50-2.90	3.0-4.5-6.0
	15-38	20-34-60	20-39-60	20-27-35	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.18-0.20	3.00-4.50-5.90	1.0-2.0-3.0
	38-42	20-40-60	20-37-60	15-23-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.5-0.8-1.0
	42-76	30-60-98	0-30-60	5-10-20	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	76-80	30-45-60	30-42-50	10-13-20	1.60-1.70-1.75	0.06-0.13-0.20	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.2-0.5
<b>RopA:</b>									
Riddles-----	0-8	50-56-80	10-33-45	4-11-20	1.40-1.55-1.70	2.00-4.00-6.00	0.16-0.17-0.18	0.00-1.50-2.90	1.0-1.5-2.0
	8-13	40-52-60	10-27-40	18-21-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	13-33	20-30-52	20-41-50	18-29-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	33-63	30-61-70	10-25-50	10-14-20	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.16-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	63-90	52-85-90	5-8-40	5-7-18	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.5-1.0
	90-100	30-61-65	25-29-50	10-10-20	1.80-1.90-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>Oshtemo-----</b>	0-9	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>RopB:</b>									
Riddles-----	0-8	50-56-80	10-33-45	4-11-20	1.40-1.55-1.70	2.00-4.00-6.00	0.16-0.17-0.18	0.00-1.50-2.90	1.0-1.5-2.0
	8-13	40-52-60	10-27-40	18-21-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	13-33	20-30-52	20-41-50	18-29-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	33-63	30-61-70	10-25-50	10-14-20	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.16-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	63-90	52-85-90	5-8-40	5-7-18	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.5-1.0
	90-100	30-61-65	25-29-50	10-10-20	1.80-1.90-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>Oshtemo-----</b>	0-9	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>RopC2:</b>									
Riddles-----	0-5	50-56-80	10-33-45	4-11-20	1.40-1.55-1.70	2.00-4.00-6.00	0.16-0.17-0.18	0.00-1.50-2.90	1.0-1.5-2.0
	5-13	40-52-60	10-27-40	18-21-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	13-33	20-30-52	20-41-50	18-29-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	33-63	30-61-70	10-25-50	10-14-20	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.16-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	63-90	52-85-90	5-8-40	5-7-18	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.5-1.0
	90-100	30-61-65	25-29-50	10-10-20	1.80-1.90-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0



Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>RopC2:</b>									
Oshtemo-----	0-6	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	6-14	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>RopD2:</b>									
Riddles-----	0-5	50-56-80	10-33-45	4-11-20	1.40-1.55-1.70	2.00-4.00-6.00	0.16-0.17-0.18	0.00-1.50-2.90	1.0-1.5-2.0
	5-13	40-52-60	10-27-40	18-21-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	13-33	20-30-52	20-41-50	18-29-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	33-63	30-61-70	10-25-50	10-14-20	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.16-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	63-90	52-85-90	5-8-40	5-7-18	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.5-1.0
	90-100	30-61-65	25-29-50	10-10-20	1.80-1.90-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
Oshtemo-----	0-6	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	6-14	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>RoqB:</b>									
Riddles-----	0-8	50-56-80	10-33-45	4-11-20	1.40-1.55-1.70	2.00-4.00-6.00	0.16-0.17-0.18	0.00-1.50-2.90	1.0-1.5-2.0
	8-13	40-52-60	10-27-40	18-21-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	13-33	20-30-52	20-41-50	18-29-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	33-63	30-61-70	10-25-50	10-14-20	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.16-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	63-90	52-85-90	5-8-40	5-7-18	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.5-1.0
	90-100	30-61-65	25-29-50	10-10-20	1.80-1.90-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
Metea-----	0-9	70-80-90	5-16-25	3-4-8	1.40-1.55-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.2-2.0
	9-28	70-81-100	0-15-25	0-4-10	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.09-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	28-32	45-58-70	10-24-50	12-18-22	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	32-44	30-37-60	20-36-50	24-27-35	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.0-0.2-0.5
	44-80	30-44-60	30-41-50	10-15-20	1.60-1.70-1.75	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.2-0.5
<b>RoqC2:</b>									
Riddles-----	0-5	50-56-80	10-33-45	4-11-20	1.40-1.55-1.70	2.00-4.00-6.00	0.16-0.17-0.18	0.00-1.50-2.90	1.0-1.5-2.0
	5-13	40-52-60	10-27-40	18-21-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	13-33	20-30-52	20-41-50	18-29-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	33-63	30-61-70	10-25-50	10-14-20	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.16-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	63-90	52-85-90	5-8-40	5-7-18	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.5-1.0
	90-100	30-61-65	25-29-50	10-10-20	1.80-1.90-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
Metea-----	0-7	70-80-90	5-16-25	3-4-8	1.40-1.55-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.2-2.0
	7-28	70-81-100	0-15-25	0-4-10	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.09-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	28-32	45-58-70	10-24-50	12-18-22	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	32-44	30-37-60	20-36-50	24-27-35	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.0-0.2-0.5
	44-80	30-44-60	30-41-50	10-15-20	1.60-1.70-1.75	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.2-0.5
<b>RoqD2:</b>									
Riddles-----	0-5	50-56-80	10-33-45	4-11-20	1.40-1.55-1.70	2.00-4.00-6.00	0.16-0.17-0.18	0.00-1.50-2.90	1.0-1.5-2.0
	5-13	40-52-60	10-27-40	18-21-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	13-33	20-30-52	20-41-50	18-29-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	33-63	30-61-70	10-25-50	10-14-20	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.16-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	63-90	52-85-90	5-8-40	5-7-18	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.5-1.0
	90-100	30-61-65	25-29-50	10-10-20	1.80-1.90-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
Metea-----	0-7	70-80-90	5-16-25	3-4-8	1.40-1.55-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.2-2.0
	7-28	70-81-100	0-15-25	0-4-10	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.09-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	28-32	45-58-70	10-24-50	12-18-22	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	32-44	30-37-60	20-36-50	24-27-35	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.0-0.2-0.5
	44-80	30-44-60	30-41-50	10-15-20	1.60-1.70-1.75	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.2-0.5

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>SdzA:</b>									
<b>Selfridge-----</b>	0-11	70-80-90	0-13-25	2-7-15	1.25-1.33-1.40	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	11-25	70-77-98	1-19-20	2-4-15	1.40-1.50-1.60	5.95-12.97-19.98	0.06-0.08-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	25-29	30-64-70	15-23-50	5-13-35	1.60-1.70-1.75	0.20-0.40-0.60	0.12-0.16-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	29-32	10-35-50	30-34-60	20-31-35	1.60-1.70-1.75	0.20-0.40-0.60	0.15-0.18-0.20	3.00-4.50-5.90	0.5-0.8-1.0
	32-80	30-45-52	30-40-50	10-15-20	1.60-1.70-1.75	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.5-0.8-1.0
<b>Crosier-----</b>	0-11	25-45-50	30-40-50	5-15-25	1.20-1.43-1.65	0.60-1.30-2.00	0.16-0.17-0.19	0.00-1.50-2.90	1.0-2.0-3.0
	11-30	25-40-70	5-32-50	20-28-34	1.40-1.55-1.70	0.20-0.40-0.60	0.12-0.16-0.19	3.00-4.50-5.90	0.0-0.5-1.0
	30-38	30-45-60	5-40-50	12-15-25	1.60-1.70-1.80	0.20-0.40-0.60	0.12-0.14-0.16	0.00-1.50-2.90	0.0-0.2-0.5
	38-80	30-45-60	5-40-50	10-15-20	1.75-1.80-2.00	0.06-0.13-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>SdzaB:</b>									
<b>Selfridge-----</b>	0-11	70-80-90	0-13-25	2-7-15	1.25-1.33-1.40	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	11-25	70-77-98	1-19-20	2-4-15	1.40-1.50-1.60	5.95-12.97-19.98	0.06-0.08-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	25-29	30-64-70	15-23-50	5-13-35	1.60-1.70-1.75	0.20-0.40-0.60	0.12-0.16-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	29-32	10-35-50	30-34-60	20-31-35	1.60-1.70-1.75	0.20-0.40-0.60	0.15-0.18-0.20	3.00-4.50-5.90	0.5-0.8-1.0
	32-80	30-45-52	30-40-50	10-15-20	1.60-1.70-1.75	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.5-0.8-1.0
<b>Brems-----</b>	0-9	70-81-90	0-13-15	1-6-12	1.50-1.58-1.65	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	9-27	70-81-90	0-13-15	1-6-12	1.50-1.58-1.65	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.2-0.5-1.0
	27-72	75-88-98	0-8-15	1-4-10	1.60-1.68-1.75	6.00-13.00-20.00	0.05-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	72-80	75-88-98	0-8-15	1-4-6	1.60-1.68-1.75	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>SesA:</b>									
<b>Schoolcraft---</b>	0-14	25-44-52	20-40-50	12-16-20	1.30-1.45-1.60	0.57-1.28-1.98	0.18-0.20-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	14-29	20-55-70	5-18-50	18-27-35	1.40-1.55-1.70	0.57-1.28-1.98	0.12-0.16-0.19	3.00-4.50-5.90	0.0-0.2-0.5
	29-39	45-73-80	5-10-40	10-17-25	1.50-1.60-1.70	2.00-4.00-6.00	0.09-0.12-0.15	0.00-1.50-2.90	0.5-0.8-1.0
	39-77	70-94-100	0-2 -25	1-4-10	1.55-1.63-1.70	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	77-95	85-91-100	0-7 -25	0-2-10	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>Sn1A:</b>									
<b>Southwest-----</b>	0-10	10-12-20	50-64-70	18-24-27	1.30-1.45-1.60	0.60-1.30-2.00	0.22-0.23-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	10-23	5-10-20	50-62-70	18-28-39	1.40-1.55-1.70	0.60-1.30-2.00	0.18-0.20-0.22	0.00-3.50-5.90	1.0-2.0-3.0
	23-34	5-12-30	40-60-70	18-28-39	1.40-1.55-1.70	0.20-0.40-0.60	0.20-0.22-0.24	0.00-3.50-5.90	3.0-4.5-6.0
	34-45	5-12-30	40-60-70	18-28-35	1.40-1.55-1.70	0.20-0.40-0.60	0.17-0.19-0.22	0.00-3.50-5.90	0.5-0.8-1.0
	45-75	5-12-30	40-60-70	18-28-35	1.40-1.55-1.70	0.20-0.40-0.60	0.21-0.22-0.24	0.00-3.50-5.90	2.0-3.5-5.0
	75-80	5-12-30	40-64-70	15-24-32	1.40-1.60-1.75	0.20-0.40-0.60	0.08-0.14-0.22	0.00-2.50-5.90	0.0-0.5-1.0
<b>TmpA:</b>									
<b>Tracy-----</b>	0-9	50-65-80	5-25-50	8-10-16	1.40-1.55-1.70	0.60-1.30-2.00	0.10-0.16-0.21	0.00-1.50-2.90	1.0-1.5-2.0
	9-47	25-60-80	5-26-50	8-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-60	45-60-90	5-19-30	3-21-24	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	60-86	70-85-100	0-7-30	3-8-8	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5
<b>TmpB:</b>									
<b>Tracy-----</b>	0-9	50-65-80	5-25-50	8-10-16	1.40-1.55-1.70	0.60-1.30-2.00	0.10-0.16-0.21	0.00-1.50-2.90	1.0-1.5-2.0
	9-47	25-60-80	5-26-50	8-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-60	45-60-90	5-19-30	3-21-24	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	60-86	70-85-100	0-7-30	3-8-8	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5
<b>TmpC2:</b>									
<b>Tracy-----</b>	0-5	50-65-80	5-25-50	8-10-16	1.40-1.55-1.70	0.60-1.30-2.00	0.10-0.16-0.21	0.00-1.50-2.90	1.0-1.5-2.0
	5-47	25-60-80	5-26-50	8-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-60	45-60-90	5-19-30	3-21-24	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	60-86	70-85-100	0-7-30	3-8-8	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5
<b>TmpD:</b>									
<b>Tracy-----</b>	0-9	50-65-80	5-25-50	8-10-16	1.40-1.55-1.70	0.60-1.30-2.00	0.10-0.16-0.21	0.00-1.50-2.90	1.0-1.5-2.0
	9-47	25-60-80	5-26-50	8-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-60	45-60-90	5-19-30	3-21-24	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	60-86	70-85-100	0-7-30	3-8-8	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>TnwA:</b>									
<b>Troxel-----</b>	0-50	5-20-40	50-56-80	20-24-27	1.20-1.35-1.50	0.60-1.30-2.00	0.20-0.23-0.26	0.00-1.50-2.90	3.0-4.0-5.0
	50-70	20-25-45	20-45-50	25-30-35	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.18-0.20	3.00-4.50-5.90	0.5-1.2-2.0
	70-91	30-60-80	10-24-50	12-16-20	1.50-1.60-1.70	2.00-4.00-6.00	0.05-0.09-0.13	0.00-1.50-2.90	0.0-0.2-0.5
<b>TxuA:</b>									
<b>Tyner-----</b>	0-12	70-86-95	0-8-20	3-6-8	1.40-1.48-1.55	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	12-20	70-87-95	0-7-20	3-6-8	1.45-1.53-1.60	6.00-13.00-20.00	0.09-0.10-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	20-41	70-94-100	0-2-20	1-4-6	1.55-1.63-1.70	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	41-80	88-95-100	0-2-10	1-3-6	1.55-1.63-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>TxuB:</b>									
<b>Tyner-----</b>	0-12	70-86-95	0-8-20	3-6-8	1.40-1.48-1.55	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	12-20	70-87-95	0-7-20	3-6-8	1.45-1.53-1.60	6.00-13.00-20.00	0.09-0.10-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	20-41	70-94-100	0-2-20	1-4-6	1.55-1.63-1.70	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	41-80	88-95-100	0-2-10	1-3-6	1.55-1.63-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>TxuC:</b>									
<b>Tyner-----</b>	0-12	70-86-95	0-8-20	3-6-8	1.40-1.48-1.55	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	12-20	70-87-95	0-7-20	3-6-8	1.45-1.53-1.60	6.00-13.00-20.00	0.09-0.10-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	20-41	70-94-100	0-2-20	1-4-6	1.55-1.63-1.70	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	41-80	88-95-100	0-2-10	1-3-6	1.55-1.63-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>TxuD:</b>									
<b>Tyner-----</b>	0-12	70-86-95	0-8-20	3-6-8	1.40-1.48-1.55	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	12-20	70-87-95	0-7-20	3-6-8	1.45-1.53-1.60	6.00-13.00-20.00	0.09-0.10-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	20-41	70-94-100	0-2-20	1-4-6	1.55-1.63-1.70	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	41-80	88-95-100	0-2-10	1-3-6	1.55-1.63-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>TxuF:</b>									
<b>Tyner-----</b>	0-12	70-86-95	0-8-20	3-6-8	1.40-1.48-1.55	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	12-20	70-87-95	0-7-20	3-6-8	1.45-1.53-1.60	6.00-13.00-20.00	0.09-0.10-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	20-41	70-94-100	0-2-20	1-4-6	1.55-1.63-1.70	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	41-80	88-95-100	0-2-10	1-3-6	1.55-1.63-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>Uam:</b>									
<b>Udorthents, loamy.</b>									
<b>UdeA:</b>									
<b>Urban land.</b>									
<b>Bainter-----</b>	0-9	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	9-13	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	13-31	45-70-90	5-16-50	10-14-18	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.12-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	31-44	45-78-85	5-5-50	10-17-22	1.25-1.48-1.70	2.00-4.00-6.00	0.05-0.11-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	44-54	45-70-80	5-5-50	20-25-30	1.40-1.50-1.60	0.60-1.30-2.00	0.10-0.16-0.21	3.00-4.50-5.90	0.0-0.8-1.0
	54-80	85-91-100	0-7-15	0-2-10	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>UdeB:</b>									
<b>Urban land.</b>									
<b>Bainter-----</b>	0-9	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	9-13	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	13-31	45-70-90	5-16-50	10-14-18	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.12-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	31-44	45-78-85	5-5-50	10-17-22	1.25-1.48-1.70	2.00-4.00-6.00	0.05-0.11-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	44-54	45-70-80	5-5-50	20-25-30	1.40-1.50-1.60	0.60-1.30-2.00	0.10-0.16-0.21	3.00-4.50-5.90	0.0-0.8-1.0
	54-80	85-91-100	0-7-15	0-2-10	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
UdeC: Urban land.									
Bainter-----	0-5	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	5-13	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	13-31	45-70-90	5-16-50	10-14-18	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.12-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	31-44	45-78-85	5-5-50	10-17-22	1.25-1.48-1.70	2.00-4.00-6.00	0.05-0.11-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	44-54	45-70-80	5-5-50	20-25-30	1.40-1.50-1.60	0.60-1.30-2.00	0.10-0.16-0.21	3.00-4.50-5.90	0.0-0.8-1.0
	54-80	85-91-100	0-7-15	0-2-10	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
UdkA: Urban land.									
Brady-----	0-9	52-62-80	5-28-35	2-10-15	1.35-1.45-1.55	2.00-4.00-6.00	0.12-0.14-0.16	0.00-1.50-2.90	2.0-3.0-4.0
	9-37	50-65-80	5-20-35	5-15-22	1.35-1.45-1.55	2.00-4.00-6.00	0.12-0.15-0.17	0.00-1.50-2.90	0.0-0.0-0.0
	37-56	52-80-85	5-13-35	5-7-20	1.35-1.43-1.50	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.0-0.0
	56-80	90-93-99	1-5-10	0-2-10	1.40-1.45-1.50	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.0-0.0
UdzA: Urban land.									
Auten-----	0-9	30-33-52	30-49-50	11-18-22	1.30-1.45-1.60	0.60-1.30-2.00	0.20-0.21-0.22	0.00-1.50-2.90	2.0-3.0-4.0
	9-22	30-40-70	10-30-50	18-30-34	1.40-1.55-1.70	0.60-1.30-2.00	0.12-0.16-0.19	3.00-4.50-5.90	0.0-0.5-1.0
	22-80	75-85-100	0-8-20	1-7-10	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
UeaA: Urban land.									
Crosier-----	0-11	25-45-50	30-40-50	5-15-25	1.20-1.43-1.65	0.60-1.30-2.00	0.16-0.17-0.19	0.00-1.50-2.90	1.0-2.0-3.0
	11-30	25-40-70	5-32-50	20-28-34	1.40-1.55-1.70	0.20-0.40-0.60	0.12-0.16-0.19	3.00-4.50-5.90	0.0-0.5-1.0
	30-38	30-45-60	5-40-50	12-15-25	1.60-1.70-1.80	0.20-0.40-0.60	0.12-0.14-0.16	0.00-1.50-2.90	0.0-0.2-0.5
	38-80	30-45-60	5-40-50	10-15-20	1.75-1.80-2.00	0.06-0.13-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
UeqA: Urban land.									
Gilford-----	0-14	50-70-80	10-15-45	10-15-20	1.40-1.55-1.70	2.00-4.00-6.00	0.13-0.14-0.15	0.00-1.50-2.90	2.0-3.0-4.0
	14-32	50-70-80	10-16-45	8-14-20	1.50-1.60-1.70	2.00-4.00-6.00	0.12-0.14-0.17	0.00-1.50-2.90	0.0-0.5-1.0
	32-38	70-85-95	0-8-30	3-7-12	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.08-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	38-80	75-89-98	0-6-25	1-5-10	1.60-1.70-1.80	6.00-13.00-20.00	0.02-0.05-0.07	0.00-1.50-2.90	0.0-0.2-0.5
UewA: Urban land.									
Brems-----	0-9	70-81-90	0-13-15	1-6-12	1.50-1.58-1.65	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	9-27	70-81-90	0-13-15	1-6-12	1.50-1.58-1.65	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.2-0.5-1.0
	27-72	75-88-98	0-8-15	1-4-10	1.60-1.68-1.75	6.00-13.00-20.00	0.05-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	72-80	75-88-98	0-8-15	1-4-6	1.60-1.68-1.75	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
Morocco-----	0-9	70-85-90	1-10-15	1-5-6	1.40-1.50-1.60	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.2-2.0
	9-60	70-94-100	0-3-15	1-3-10	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.08-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	60-80	85-97-100	0-1-10	1-2-6	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
UfbA: Urban land.									
Brookston-----	0-9	30-40-50	30-40-50	14-20-27	1.35-1.43-1.50	0.60-1.30-2.00	0.20-0.21-0.22	0.00-1.50-2.90	3.0-4.0-5.0
	9-48	20-35-60	20-35-60	25-30-35	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.5-1.2-2.0
	48-68	30-41-60	30-40-50	12-19-25	1.60-1.70-1.75	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.2-0.5
	68-80	30-45-60	30-40-50	10-15-20	1.60-1.70-1.75	0.20-0.40-0.60	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
UfhA: Urban land.									

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
UfhA:									
Coloma-----	0-12	70-91-100	0-5-10	0-4-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.07-0.09	0.00-1.50-2.90	0.5-1.2-2.0
	12-47	70-92-100	0-5-25	0-3-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.09-0.12	0.00-1.50-2.90	0.0-0.2-0.5
	47-80	70-93-100	0-2-25	2-5-12	1.50-1.58-1.65	2.00-11.00-20.00	0.03-0.06-0.08	0.00-1.50-2.90	0.0-0.2-0.5
UfhB:									
Urban land.									
Coloma-----	0-12	85-91-100	0-5-10	0-4-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.07-0.09	0.00-1.50-2.90	0.5-1.2-2.0
	12-47	70-92-100	0-5-25	0-3-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.09-0.12	0.00-1.50-2.90	0.0-0.2-0.5
	47-80	70-93-100	0-2-25	2-5-12	1.50-1.58-1.65	2.00-11.00-20.00	0.03-0.06-0.08	0.00-1.50-2.90	0.0-0.2-0.5
UfhC:									
Urban land.									
Coloma-----	0-12	85-91-100	0-5-10	0-4-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.07-0.09	0.00-1.50-2.90	0.5-1.2-2.0
	12-47	70-92-100	0-5-25	0-3-10	1.35-1.50-1.65	6.00-13.00-20.00	0.05-0.09-0.12	0.00-1.50-2.90	0.0-0.2-0.5
	47-80	70-93-100	0-2-25	2-5-12	1.50-1.58-1.65	2.00-11.00-20.00	0.03-0.06-0.08	0.00-1.50-2.90	0.0-0.2-0.5
UfmA:									
Urban land.									
Coupee-----	0-21	8-15-20	50-60-70	20-25-27	1.30-1.45-1.60	0.60-1.30-2.00	0.22-0.23-0.24	0.00-1.50-2.90	2.0-3.0-4.0
	21-33	30-35-60	20-37-50	20-28-35	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.14-0.16	3.00-4.50-5.90	0.5-0.8-1.0
	33-52	70-88-100	0-6-30	3-6-10	1.50-1.60-1.70	6.00-13.00-20.00	0.06-0.09-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	52-98	87-90-100	0-6-10	2-4-6	1.50-1.60-1.70	20.00-20.00-20.00	0.04-0.05-0.06	0.00-1.50-2.90	0.0-0.2-0.5
UfrA:									
Urban land.									
Del Rey-----	0-9	0-12-20	45-58-70	27-30-40	1.30-1.40-1.50	0.60-1.30-2.00	0.22-0.23-0.24	0.00-1.50-2.90	2.0-2.5-3.0
	9-33	0-10-20	40-50-70	35-40-50	1.40-1.53-1.65	0.06-0.13-0.20	0.12-0.16-0.20	3.00-4.50-5.90	0.0-0.5-1.0
	33-90	0-15-40	40-55-80	10-30-40	1.50-1.60-1.75	0.06-0.13-0.20	0.09-0.10-0.11	3.00-4.50-5.90	0.0-0.2-0.5
UftA:									
Urban land.									
Elston-----	0-20	50-65-85	5-25-50	8-10-15	1.40-1.50-1.60	2.00-4.00-6.00	0.12-0.16-0.20	0.00-1.50-2.90	2.0-3.0-4.0
	20-34	50-55-85	5-31-50	10-14-18	1.40-1.50-1.60	2.00-4.00-6.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-1.2-2.0
	34-72	50-80-90	0-13-25	4-7-10	1.50-1.60-1.70	6.00-13.00-20.00	0.08-0.11-0.13	0.00-1.50-2.90	0.5-0.8-1.0
	72-80	87-91-100	0-6-10	1-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
UfzA:									
Urban land.									
Mishawaka-----	0-12	50-73-85	5-17-50	5-10-15	1.40-1.55-1.70	2.00-4.00-6.00	0.13-0.15-0.17	0.00-1.50-2.90	2.0-3.0-4.0
	12-18	50-72-85	5-13-50	5-15-15	1.40-1.55-1.70	2.00-4.00-6.00	0.13-0.15-0.17	0.00-1.50-2.90	1.0-2.0-3.0
	18-25	50-81-90	0-11-25	5-8-15	1.45-1.58-1.70	6.00-13.00-20.00	0.09-0.12-0.14	0.00-1.50-2.90	0.5-0.8-1.0
	25-58	87-95-100	0-3-10	0-2-5	1.50-1.63-1.75	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	58-80	87-96-100	0-3-10	0-1-3	1.60-1.73-1.85	6.00-13.00-20.00	0.02-0.05-0.07	0.00-1.50-2.90	0.0-0.2-0.5
UgaA:									
Urban land.									
Morocco-----	0-9	70-85-90	1-10-15	1-5-6	1.40-1.50-1.60	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.2-2.0
	9-60	70-94-100	0-3-15	1-3-10	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.08-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	60-80	85-97-100	0-1-10	1-2-6	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>Ug1A:</b> Urban land.									
<b>Osolo</b> -----	0-9	70-80-90	0-15-25	3-5-8	1.40-1.50-1.60	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.2-2.0
	9-25	70-83-90	0-12-25	3-5-8	1.50-1.55-1.60	6.00-13.00-20.00	0.09-0.10-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	25-40	87-95-100	0-3-10	0-2-5	1.50-1.60-1.70	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	40-80	87-91-100	0-5-10	0-4-5	1.50-1.60-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
<b>UgrA:</b> Urban land.									
<b>Rensselaer</b> ----	0-15	30-41-50	30-38-50	11-21-27	1.30-1.45-1.60	0.60-1.30-2.00	0.20-0.21-0.22	0.00-1.50-2.90	3.0-4.5-6.0
	15-38	20-34-60	20-39-60	20-27-35	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.18-0.20	3.00-4.50-5.90	1.0-2.0-3.0
	38-42	20-40-60	20-37-60	15-23-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.5-0.8-1.0
	42-76	30-60-98	0-30-60	5-10-20	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	76-80	30-45-60	30-42-50	10-13-20	1.60-1.70-1.75	0.06-0.13-0.20	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.2-0.5
<b>UgsA:</b> Urban land.									
<b>Riddles</b> -----	0-8	50-56-80	10-33-45	4-11-20	1.40-1.55-1.70	2.00-4.00-6.00	0.16-0.17-0.18	0.00-1.50-2.90	1.0-1.5-2.0
	8-13	40-52-60	10-27-40	18-21-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	13-33	20-30-52	20-41-50	18-29-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	33-63	30-61-70	10-25-50	10-14-20	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.16-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	63-90	52-85-90	5-8-40	5-7-18	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.5-1.0
	90-100	30-61-65	25-29-50	10-10-20	1.80-1.90-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>Oshtemo</b> -----	0-9	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>UgsB:</b> Urban land.									
<b>Riddles</b> -----	0-8	50-56-80	10-33-45	4-11-20	1.40-1.55-1.70	2.00-4.00-6.00	0.16-0.17-0.18	0.00-1.50-2.90	1.0-1.5-2.0
	8-13	40-52-60	10-27-40	18-21-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	13-33	20-30-52	20-41-50	18-29-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	33-63	30-61-70	10-25-50	10-14-20	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.16-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	63-90	52-85-90	5-8-40	5-7-18	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.5-1.0
	90-100	30-61-65	25-29-50	10-10-20	1.80-1.90-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>Oshtemo</b> -----	0-9	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-72-80	1-19-50	5-9-15	1.40-1.55-1.70	2.00-4.00-6.00	0.06-0.09-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>UgvA:</b> Urban land.									
<b>Tyner</b> -----	0-12	70-86-95	0-8-20	3-6-8	1.40-1.48-1.55	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	12-20	70-87-95	0-7-20	3-6-8	1.45-1.53-1.60	6.00-13.00-20.00	0.09-0.10-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	20-41	70-94-100	0-2-20	1-4-6	1.55-1.63-1.70	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	41-80	88-95-100	0-2-10	1-3-6	1.55-1.63-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
UgvB: Urban land.									
Tyner-----	0-12	70-86-95	0-8-20	3-6-8	1.40-1.48-1.55	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	12-20	70-87-95	0-7-20	3-6-8	1.45-1.53-1.60	6.00-13.00-20.00	0.09-0.10-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	20-41	70-94-100	0-2-20	1-4-6	1.55-1.63-1.70	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	41-80	88-95-100	0-2-10	1-3-6	1.55-1.63-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
UgvC: Urban land.									
Tyner-----	0-12	70-86-95	0-8-20	3-6-8	1.40-1.48-1.55	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	12-20	70-87-95	0-7-20	3-6-8	1.45-1.53-1.60	6.00-13.00-20.00	0.09-0.10-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	20-41	70-94-100	0-2-20	1-4-6	1.55-1.63-1.70	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	41-80	88-95-100	0-2-10	1-3-6	1.55-1.63-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
UgvD: Urban land.									
Tyner-----	0-12	70-86-95	0-8-20	3-6-8	1.40-1.48-1.55	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	12-20	70-87-95	0-7-20	3-6-8	1.45-1.53-1.60	6.00-13.00-20.00	0.09-0.10-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	20-41	70-94-100	0-2-20	1-4-6	1.55-1.63-1.70	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	41-80	88-95-100	0-2-10	1-3-6	1.55-1.63-1.70	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.2-0.5
UhmA: Urban land.									
Hillsdale-----	0-8	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	8-14	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	14-44	50-70-85	5-16-50	10-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	44-84	50-60-85	5-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
UhmB: Urban land.									
Hillsdale-----	0-8	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	8-14	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	14-44	50-70-85	5-16-50	10-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	44-84	50-60-85	5-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
UhoC: Urban land.									
Hillsdale-----	0-8	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	8-14	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	14-44	50-70-85	5-16-50	10-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	44-84	50-60-85	5-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
Oshtemo-----	0-9	50-71-90	0-19-50	5-10-20	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
UhoD: Urban land.									
Hillsdale-----	0-8	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	8-14	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	14-44	50-70-85	5-16-50	10-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	44-84	50-60-85	5-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
UhoD:									
Oshtemo-----	0-9	50-71-90	0-19-50	5-10-20	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
UhpC:									
Urban land.									
Hillsdale-----	0-8	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	8-14	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	14-44	50-70-85	5-16-50	10-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	44-84	50-60-85	5-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
Tracy-----	0-5	50-65-80	5-25-50	8-10-16	1.40-1.55-1.70	0.60-1.30-2.00	0.10-0.16-0.21	0.00-1.50-2.90	1.0-1.5-2.0
	5-47	25-60-80	5-26-50	8-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-60	45-60-90	5-19-30	3-21-24	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	60-86	70-85-100	0-7-30	3-8-8	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5
UhpD:									
Urban land.									
Hillsdale-----	0-8	45-67-85	5-26-50	2-7-12	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	8-14	45-71-85	5-24-50	2-5-12	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.13-0.18	0.00-1.50-2.90	0.0-0.5-1.0
	14-44	50-70-85	5-16-50	10-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.15-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	44-84	50-60-85	5-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
Tracy-----	0-5	50-65-80	5-25-50	8-10-16	1.40-1.55-1.70	0.60-1.30-2.00	0.10-0.16-0.21	0.00-1.50-2.90	1.0-1.5-2.0
	5-47	25-60-80	5-26-50	8-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-60	45-60-90	5-19-30	3-21-24	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	60-86	70-85-100	0-7-30	3-8-8	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5
UhwA:									
Urban land.									
Martinsville--	0-13	25-43-52	30-42-50	12-15-20	1.30-1.45-1.60	0.60-1.30-2.00	0.18-0.21-0.24	0.00-1.50-2.90	1.0-1.5-2.0
	13-35	20-35-75	5-35-50	20-30-33	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	35-53	25-60-80	5-15-50	15-25-25	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	53-60	10-65-80	5-25-80	8-10-12	1.60-1.70-1.80	0.60-1.30-2.00	0.08-0.12-0.15	0.00-1.50-2.90	0.0-0.2-0.5
UhwB:									
Urban land.									
Martinsville--	0-5	25-43-52	30-42-50	12-15-20	1.30-1.45-1.60	0.60-1.30-2.00	0.18-0.21-0.24	0.00-1.50-2.90	1.0-1.5-2.0
	5-35	20-35-75	5-35-50	20-30-33	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	35-53	25-60-80	5-15-50	15-25-25	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	53-60	10-65-80	5-25-80	8-10-12	1.60-1.70-1.80	0.60-1.30-2.00	0.08-0.12-0.15	0.00-1.50-2.90	0.0-0.2-0.5
UhwC:									
Urban land.									
Martinsville--	0-5	25-43-52	30-42-50	12-15-20	1.30-1.45-1.60	0.60-1.30-2.00	0.18-0.21-0.24	0.00-1.50-2.90	1.0-1.5-2.0
	5-35	20-35-75	5-35-50	20-30-33	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	35-53	25-60-80	5-15-50	15-25-25	1.50-1.60-1.70	0.60-1.30-2.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	53-60	10-65-80	5-25-80	8-10-12	1.60-1.70-1.80	0.60-1.30-2.00	0.08-0.12-0.15	0.00-1.50-2.90	0.0-0.2-0.5
UkaA:									
Urban land.									
Maumee-----	0-23	70-80-90	0-14-25	2-6-10	1.60-1.68-1.75	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	2.0-3.0-4.0
	23-61	70-91-98	1-6-20	2-3-10	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.08-0.11	0.00-1.50-2.90	0.0-0.5-1.0
	61-80	85-97-100	0-2-15	0-1-10	1.45-1.55-1.65	6.00-13.00-20.00	0.05-0.06-0.07	0.00-1.50-2.90	0.0-0.5-1.0



Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>UkeA:</b> Urban land.									
Milford-----	0-18	2-10-20	40-55-70	27-35-40	1.10-1.25-1.40	0.60-1.30-2.00	0.21-0.22-0.23	3.00-4.50-5.90	1.0-2.0-3.0
	18-50	2-8-30	40-52-70	35-40-42	1.40-1.50-1.60	0.20-0.40-0.60	0.11-0.16-0.20	3.00-4.50-5.90	0.5-1.2-2.0
	50-60	2-10-30	40-60-70	20-30-42	1.40-1.60-1.75	0.20-0.40-0.60	0.10-0.16-0.22	3.00-4.50-5.90	0.0-0.5-1.0
<b>Ukx A:</b> Urban land.									
Oshtemo-----	0-9	50-71-90	0-19-50	5-10-20	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>Ukx B:</b> Urban land.									
Oshtemo-----	0-9	50-71-90	0-19-50	5-10-20	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>Ukx C:</b> Urban land.									
Oshtemo-----	0-9	50-71-90	0-19-50	5-10-20	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.15-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	9-14	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	14-35	50-71-90	0-14-50	5-15-20	1.45-1.60-1.70	2.00-4.00-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	35-60	70-80-95	0-12-30	2-8-12	1.45-1.60-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-0.8-1.0
	60-80	87-88-100	0-9-10	0-3-5	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>Umf B:</b> Urban land.									
Riddles-----	0-8	50-56-80	10-33-45	4-11-20	1.40-1.55-1.70	2.00-4.00-6.00	0.16-0.17-0.18	0.00-1.50-2.90	1.0-1.5-2.0
	8-13	40-52-60	10-27-40	18-21-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	13-33	20-30-52	20-41-50	18-29-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	33-63	30-61-70	10-25-50	10-14-20	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.16-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	63-90	52-85-90	5-8-40	5-7-18	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.5-1.0
	90-100	30-61-65	25-29-50	10-10-20	1.80-1.90-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
Metea-----	0-9	70-80-90	5-16-25	3-4-8	1.40-1.55-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.2-2.0
	9-28	70-81-100	0-15-25	0-4-10	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.09-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	28-32	45-58-70	10-24-50	12-18-22	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	32-44	30-37-60	20-36-50	24-27-35	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.0-0.2-0.5
	44-80	30-44-60	30-41-50	10-15-20	1.60-1.70-1.75	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.2-0.5
<b>Umf C:</b> Urban land.									
Riddles-----	0-5	50-56-80	10-33-45	4-11-20	1.40-1.55-1.70	2.00-4.00-6.00	0.16-0.17-0.18	0.00-1.50-2.90	1.0-1.5-2.0
	5-13	40-52-60	10-27-40	18-21-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	13-33	20-30-52	20-41-50	18-29-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	33-63	30-61-70	10-25-50	10-14-20	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.16-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	63-90	52-85-90	5-8-40	5-7-18	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.5-1.0
	90-100	30-61-65	25-29-50	10-10-20	1.80-1.90-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>UmfC:</b>									
<b>Metea-----</b>	0-7	70-80-90	5-16-25	3-4-8	1.40-1.55-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.2-2.0
	7-28	70-81-100	0-15-25	0-4-10	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.09-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	28-32	45-58-70	10-24-50	12-18-22	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	32-44	30-37-60	20-36-50	24-27-35	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.0-0.2-0.5
	44-80	30-44-60	30-41-50	10-15-20	1.60-1.70-1.75	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.2-0.5
<b>UmfD:</b>									
<b>Urban land.</b>									
<b>Riddles-----</b>	0-5	50-56-80	10-33-45	4-11-20	1.40-1.55-1.70	2.00-4.00-6.00	0.16-0.17-0.18	0.00-1.50-2.90	1.0-1.5-2.0
	5-13	40-52-60	10-27-40	18-21-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.18	3.00-4.50-5.90	0.5-0.8-1.0
	13-33	20-30-52	20-41-50	18-29-30	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.5-0.8-1.0
	33-63	30-61-70	10-25-50	10-14-20	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.16-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	63-90	52-85-90	5-8-40	5-7-18	1.40-1.55-1.70	2.00-4.00-6.00	0.08-0.11-0.13	0.00-1.50-2.90	0.0-0.5-1.0
	90-100	30-61-65	25-29-50	10-10-20	1.80-1.90-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.5-0.8-1.0
<b>Metea-----</b>	0-7	70-80-90	5-16-25	3-4-8	1.40-1.55-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.2-2.0
	7-28	70-81-100	0-15-25	0-4-10	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.09-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	28-32	45-58-70	10-24-50	12-18-22	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	32-44	30-37-60	20-36-50	24-27-35	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.0-0.2-0.5
	44-80	30-44-60	30-41-50	10-15-20	1.60-1.70-1.75	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.2-0.5
<b>UmpA:</b>									
<b>Urban land.</b>									
<b>Schoolcraft---</b>	0-14	25-44-52	20-40-50	12-16-20	1.30-1.45-1.60	0.57-1.28-1.98	0.18-0.20-0.22	0.00-1.50-2.90	1.0-2.0-3.0
	14-29	20-55-70	5-18-50	18-27-35	1.40-1.55-1.70	0.57-1.28-1.98	0.12-0.16-0.19	3.00-4.50-5.90	0.0-0.2-0.5
	29-39	45-73-80	5-10-40	10-17-25	1.50-1.60-1.70	2.00-4.00-6.00	0.09-0.12-0.15	0.00-1.50-2.90	0.5-0.8-1.0
	39-77	70-94-100	0-2-25	1-4-10	1.55-1.63-1.70	6.00-13.00-20.00	0.06-0.07-0.08	0.00-1.50-2.90	0.0-0.2-0.5
	77-95	85-91-100	0-7-25	0-2-10	1.60-1.70-1.80	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>UmuA:</b>									
<b>Urban land.</b>									
<b>Southwest-----</b>	0-10	10-12-20	50-64-70	18-24-27	1.30-1.45-1.60	0.60-1.30-2.00	0.22-0.23-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	10-23	5-10-20	50-62-70	18-28-39	1.40-1.55-1.70	0.60-1.30-2.00	0.18-0.20-0.22	0.00-3.50-5.90	1.0-2.0-3.0
	23-34	5-12-30	40-60-70	18-28-39	1.40-1.55-1.70	0.20-0.40-0.60	0.20-0.22-0.24	0.00-3.50-5.90	3.0-4.5-6.0
	34-45	5-12-30	40-60-70	18-28-35	1.40-1.55-1.70	0.20-0.40-0.60	0.17-0.19-0.22	0.00-3.50-5.90	0.5-0.8-1.0
	45-75	5-12-30	40-60-70	18-28-35	1.40-1.55-1.70	0.20-0.40-0.60	0.21-0.22-0.24	0.00-3.50-5.90	2.0-3.5-5.0
	75-80	5-12-30	40-64-70	15-24-32	1.40-1.60-1.75	0.20-0.40-0.60	0.08-0.14-0.22	0.00-2.50-5.90	0.0-0.5-1.0
<b>UmwA:</b>									
<b>Urban land.</b>									
<b>Tracy-----</b>	0-9	50-65-80	5-25-50	8-10-16	1.40-1.55-1.70	0.60-1.30-2.00	0.10-0.16-0.21	0.00-1.50-2.90	1.0-1.5-2.0
	9-47	25-60-80	5-26-50	8-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-60	45-60-90	5-19-30	3-21-24	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	60-86	70-85-100	0-7-30	3-8-8	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5
<b>UmwB:</b>									
<b>Urban land.</b>									
<b>Tracy-----</b>	0-9	50-65-80	5-25-50	8-10-16	1.40-1.55-1.70	0.60-1.30-2.00	0.10-0.16-0.21	0.00-1.50-2.90	1.0-1.5-2.0
	9-47	25-60-80	5-26-50	8-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-60	45-60-90	5-19-30	3-21-24	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	60-86	70-85-100	0-7-30	3-8-8	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
UmwC: Urban land.									
Tracy-----	0-5	50-65-80	5-25-50	8-10-16	1.40-1.55-1.70	0.60-1.30-2.00	0.10-0.16-0.21	0.00-1.50-2.90	1.0-1.5-2.0
	5-47	25-60-80	5-26-50	8-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-60	45-60-90	5-19-30	3-21-24	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	60-86	70-85-100	0-7-30	3-8-8	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5
UmwD: Urban land.									
Tracy-----	0-9	50-65-80	5-25-50	8-10-16	1.40-1.55-1.70	0.60-1.30-2.00	0.10-0.16-0.21	0.00-1.50-2.90	1.0-1.5-2.0
	9-47	25-60-80	5-26-50	8-14-18	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	47-60	45-60-90	5-19-30	3-21-24	1.50-1.60-1.70	0.60-1.30-2.00	0.09-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	60-86	70-85-100	0-7-30	3-8-8	1.60-1.70-1.80	6.00-13.00-20.00	0.05-0.08-0.10	0.00-1.50-2.90	0.0-0.2-0.5
UmxA: Urban land.									
Troxel-----	0-50	5-20-40	50-56-80	20-24-27	1.20-1.35-1.50	0.60-1.30-2.00	0.20-0.23-0.26	0.00-1.50-2.90	3.0-4.0-5.0
	50-70	20-25-45	20-45-50	25-30-35	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.18-0.20	3.00-4.50-5.90	0.5-1.2-2.0
	70-91	30-60-80	10-24-50	12-16-20	1.50-1.60-1.70	2.00-4.00-6.00	0.05-0.09-0.13	0.00-1.50-2.90	0.0-0.2-0.5
UnoA: Urban land.									
Whitaker-----	0-17	30-44-50	30-41-50	8-15-19	1.30-1.45-1.60	0.60-1.30-2.00	0.18-0.21-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	17-39	20-40-70	10-32-50	18-28-33	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.5-0.8-1.0
	39-48	55-60-80	10-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	48-86	10-70-95	10-20-70	3-10-18	1.50-1.60-1.70	0.60-3.30-6.00	0.19-0.20-0.21	0.00-1.50-2.90	0.5-0.8-1.0
UnqB: Urban land.									
Williamstown--	0-7	25-35-52	30-46-50	14-19-24	1.30-1.45-1.60	0.60-1.30-2.00	0.10-0.17-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	7-34	30-36-60	20-35-50	20-29-35	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.14-0.16	3.00-4.50-5.90	0.5-0.8-1.0
	34-39	30-32-60	30-45-50	15-23-27	1.50-1.60-1.70	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.5-1.0
	39-80	30-45-60	30-40-50	10-15-20	1.75-1.80-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
Crosier-----	0-11	25-45-50	30-40-50	5-15-25	1.20-1.43-1.65	0.60-1.30-2.00	0.16-0.17-0.19	0.00-1.50-2.90	1.0-2.0-3.0
	11-30	25-40-70	5-32-50	20-28-34	1.40-1.55-1.70	0.20-0.40-0.60	0.12-0.16-0.19	3.00-4.50-5.90	0.0-0.5-1.0
	30-38	30-45-60	5-40-50	12-15-25	1.60-1.70-1.80	0.20-0.40-0.60	0.12-0.14-0.16	0.00-1.50-2.90	0.0-0.2-0.5
	38-80	30-45-60	5-40-50	10-15-20	1.75-1.80-2.00	0.06-0.13-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
UntA: Urban land.									
Wunabuna, drained-----	0-21	8-15-20	50-60-70	20-25-27	1.30-1.45-1.60	0.60-1.30-2.00	0.22-0.23-0.24	0.00-1.50-2.90	2.0-3.0-4.0
	21-32	0-16-20	40-46-70	20-38-40	1.20-1.33-1.45	0.60-1.30-2.00	0.18-0.20-0.22	3.00-4.50-5.90	1.0-1.5-2.0
	32-38	0-13-20	40-41-70	20-46-50	1.20-1.33-1.45	0.60-1.30-2.00	0.18-0.20-0.22	3.00-4.50-5.90	4.0-6.0-8.0
	38-80	0-0 -10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	0.00-1.50-2.90	40-75 -90
Usl: Udorthents, rubbish.									
W: Water.									

Table 17a.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensi- bility	Organic matter
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct
<b>WcnAI:</b>									
<b>Waterford-----</b>	0-8	30-45-52	30-40-50	10-15-27	1.30-1.45-1.60	2.00-4.00-6.00	0.13-0.16-0.18	0.00-1.50-2.90	1.0-2.0-3.0
	8-41	30-65-80	5-18-50	10-17-30	1.45-1.58-1.70	2.00-4.00-6.00	0.07-0.12-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	41-46	75-85-100	1-10-20	1-5-1	1.45-1.60-1.75	20.00-20.00-20.00	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
	46-50	70-78-95	1-15-30	3-7-12	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.08-0.11	0.00-1.50-2.90	0.0-3.0-5.0
	50-80	87-90-100	1-7-12	0-3-5	1.45-1.60-1.75	20.00-20.00-20.00	0.01-0.02-0.03	0.00-1.50-2.90	0.0-0.2-0.5
<b>WoaA:</b>									
<b>Williamstown--</b>	0-7	25-35-52	30-46-50	14-19-24	1.30-1.45-1.60	0.60-1.30-2.00	0.10-0.17-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	7-34	30-36-60	20-35-50	20-29-35	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.14-0.16	3.00-4.50-5.90	0.5-0.8-1.0
	34-39	30-32-60	30-45-50	15-23-27	1.50-1.60-1.70	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.5-1.0
	39-80	30-45-60	30-40-50	10-15-20	1.75-1.80-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>WoaB2:</b>									
<b>Williamstown--</b>	0-5	25-35-52	30-46-50	14-19-24	1.30-1.45-1.60	0.60-1.30-2.00	0.10-0.17-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	5-34	30-36-60	20-35-50	20-29-35	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.14-0.16	3.00-4.50-5.90	0.5-0.8-1.0
	34-39	30-32-60	30-45-50	15-23-27	1.50-1.60-1.70	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.5-1.0
	39-80	30-45-60	30-40-50	10-15-20	1.75-1.80-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>WoaC2:</b>									
<b>Williamstown--</b>	0-5	25-35-52	30-46-50	14-19-24	1.30-1.45-1.60	0.60-1.30-2.00	0.10-0.17-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	5-34	30-36-60	20-35-50	20-29-35	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.14-0.16	3.00-4.50-5.90	0.5-0.8-1.0
	34-39	30-32-60	30-45-50	15-23-27	1.50-1.60-1.70	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.5-1.0
	39-80	30-45-60	30-40-50	10-15-20	1.75-1.80-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>WobB:</b>									
<b>Williamstown--</b>	0-7	25-35-52	30-46-50	14-19-24	1.30-1.45-1.60	0.60-1.30-2.00	0.10-0.17-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	7-34	30-36-60	20-35-50	20-29-35	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.14-0.16	3.00-4.50-5.90	0.5-0.8-1.0
	34-39	30-32-60	30-45-50	15-23-27	1.50-1.60-1.70	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.5-1.0
	39-80	30-45-60	30-40-50	10-15-20	1.75-1.80-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>Crosier-----</b>	0-11	25-45-50	30-40-50	5-15-25	1.20-1.43-1.65	0.60-1.30-2.00	0.16-0.17-0.19	0.00-1.50-2.90	1.0-2.0-3.0
	11-30	25-40-70	5-32-50	20-28-34	1.40-1.55-1.70	0.20-0.40-0.60	0.12-0.16-0.19	3.00-4.50-5.90	0.0-0.5-1.0
	30-38	30-45-60	5-40-50	12-15-25	1.60-1.70-1.80	0.20-0.40-0.60	0.12-0.14-0.16	0.00-1.50-2.90	0.0-0.2-0.5
	38-80	30-45-60	5-40-50	10-15-20	1.75-1.80-2.00	0.06-0.13-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>WrxAN:</b>									
<b>Wunabuna, drained-----</b>	0-21	8-15-20	50-60-70	20-25-27	1.30-1.45-1.60	0.60-1.30-2.00	0.22-0.23-0.24	0.00-1.50-2.90	2.0-3.0-4.0
	21-32	0-16-20	40-46-70	20-38-40	1.20-1.33-1.45	0.60-1.30-2.00	0.18-0.20-0.22	3.00-4.50-5.90	1.0-1.5-2.0
	32-38	0-13-20	40-41-70	20-46-50	1.20-1.33-1.45	0.60-1.30-2.00	0.18-0.20-0.22	3.00-4.50-5.90	4.0-6.0-8.0
	38-80	0-0-10	0-0-10	0-0-10	0.15-0.20-0.60	0.20-3.10-6.00	0.35-0.40-0.45	0.00-1.50-2.90	40-75-90
<b>WtbA:</b>									
<b>Whitaker-----</b>	0-17	30-44-50	30-41-50	8-15-19	1.30-1.45-1.60	0.60-1.30-2.00	0.18-0.21-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	17-39	20-40-70	10-32-50	18-28-33	1.40-1.50-1.60	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.5-0.8-1.0
	39-48	55-60-80	10-30-50	5-10-15	1.60-1.70-1.80	0.60-3.30-6.00	0.10-0.14-0.18	0.00-1.50-2.90	0.5-0.8-1.0
	48-86	10-70-95	10-20-70	3-10-18	1.50-1.60-1.70	0.60-3.30-6.00	0.19-0.20-0.21	0.00-1.50-2.90	0.5-0.8-1.0
<b>WujB:</b>									
<b>Williamstown--</b>	0-7	25-35-52	30-46-50	14-19-24	1.30-1.45-1.60	0.60-1.30-2.00	0.10-0.17-0.24	0.00-1.50-2.90	1.0-2.0-3.0
	7-34	30-36-60	20-35-50	20-29-35	1.50-1.60-1.70	0.60-1.30-2.00	0.12-0.14-0.16	3.00-4.50-5.90	0.5-0.8-1.0
	34-39	30-32-60	30-45-50	15-23-27	1.50-1.60-1.70	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.5-1.0
	39-80	30-45-60	30-40-50	10-15-20	1.75-1.80-2.00	0.01-0.10-0.20	0.02-0.03-0.04	0.00-1.50-2.90	0.0-0.2-0.5
<b>Moon-----</b>	0-9	70-81-90	5-15-25	3-4-8	1.40-1.55-1.70	6.00-13.00-20.00	0.10-0.11-0.12	0.00-1.50-2.90	0.5-1.2-2.0
	9-23	70-86-100	0-10-25	0-4-10	1.60-1.70-1.80	6.00-13.00-20.00	0.06-0.09-0.11	0.00-1.50-2.90	0.0-0.2-0.5
	23-35	45-57-70	10-17-50	15-26-34	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	0.00-1.50-2.90	0.0-0.2-0.5
	35-45	30-49-60	20-29-50	20-22-34	1.50-1.60-1.70	0.60-1.30-2.00	0.15-0.17-0.19	3.00-4.50-5.90	0.0-0.2-0.5
	45-80	30-50-60	30-35-50	10-15-20	1.60-1.70-1.75	0.20-0.40-0.60	0.08-0.11-0.15	0.00-1.50-2.90	0.0-0.2-0.5

Table 17b.--Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated. The abbreviation "rv" stands for representative value. Representative values are indicative of conditions that occur most commonly.)

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
<b>AahAK:</b>								
Abscota-----	0-5	.15	.15	5	2	134	75	1.0
	5-14	.17	.17					
	14-60	.15	.15					
<b>AatAN:</b>								
Ackerman, drained-----	0-8	---	---	1	2	134	200	0.5
	8-14	.28	.28					
	14-80	.15	.15					
<b>AbhAN:</b>								
Adrian, drained-----	0-9	---	---	2	2	134	200	1.0
	9-34	---	---					
	34-80	.15	.15					
<b>AbhAU:</b>								
Adrian, undrained-----	0-34	---	---	2	2	134	200	1.0
	34-80	.15	.15					
<b>ApuAN:</b>								
Antung, drained-----	0-9	---	---	2	2	134	200	1.0
	9-12	---	---					
	12-80	.15	.15					
<b>AxvA:</b>								
Auten-----	0-9	.20	.20	4	5	56	300	1.0
	9-22	.32	.37					
	22-80	.05	.10					
<b>BaaA:</b>								
Bainter-----	0-9	.17	.20	4	3	86	300	1.0
	9-13	.17	.20					
	13-31	.10	.10					
	31-44	.05	.10					
	44-54	.20	.20					
	54-80	.02	.02					
<b>BaaB:</b>								
Bainter-----	0-9	.17	.20	4	3	86	200	3.0
	9-13	.17	.20					
	13-31	.10	.10					
	31-44	.05	.10					
	44-54	.20	.20					
	54-80	.02	.02					
<b>BaaC2:</b>								
Bainter-----	0-5	.17	.20	4	3	86	200	7.0
	5-13	.17	.20					
	13-31	.10	.10					
	31-44	.05	.10					
	44-54	.20	.20					
	54-80	.02	.02					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
<b>BbmA:</b>								
Baugo-----	0-11	.43	.43	4	5	56	250	1.0
	11-29	.43	.43					
	29-36	.43	.43					
	36-56	.10	.10					
	56-80	.43	.49					
<b>BmgA:</b>								
Blount-----	0-7	.43	.43	4	6	48	200	1.0
	7-23	.43	.43					
	23-42	.43	.43					
	42-80	.43	.43					
<b>BshA:</b>								
Brady-----	0-9	.15	.15	4	3	86	300	1.0
	9-37	.24	.24					
	37-56	.20	.20					
	56-80	.10	.05					
<b>BsxA:</b>								
Brems-----	0-9	.05	.05	5	2	134	300	1.0
	9-27	.05	.05					
	27-72	.02	.02					
	72-80	.02	.02					
<b>Morocco-----</b>	0-9	.05	.05	5	2	134	300	1.0
	9-60	.02	.02					
	60-80	.02	.02					
<b>BteA:</b>								
Brems-----	0-9	.05	.05	5	2	134	300	1.0
	9-27	.05	.05					
	27-72	.02	.02					
	72-80	.02	.02					
<b>BuuA:</b>								
Brookston-----	0-9	.24	.24	5	5	56	250	1.0
	9-48	.20	.24					
	48-68	.28	.32					
	68-80	.43	.49					
<b>CmbAI:</b>								
Cohoctah-----	0-13	.24	.24	5	5	56	200	1.0
	13-56	.24	.24					
	56-80	.02	.05					
<b>CnbA:</b>								
Coloma-----	0-12	.05	.05	5	1	250	200	1.0
	12-47	.15	.15					
	47-80	.15	.15					
<b>CnbB:</b>								
Coloma-----	0-12	.05	.05	5	1	250	150	4.0
	12-47	.15	.15					
	47-80	.15	.15					
<b>CnbC:</b>								
Coloma-----	0-12	.05	.05	5	1	250	100	7.0
	12-47	.15	.15					
	47-80	.15	.15					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
<b>CnbD:</b>								
Coloma-----	0-12	.05	.05	5	1	250	100	14.0
	12-47	.15	.15					
	47-80	.15	.15					
<b>CrrA:</b>								
Coupee-----	0-21	.37	.37	4	5	56	300	1.0
	21-33	.32	.32					
	33-52	.10	.15					
	52-98	.02	.10					
<b>CvdA:</b>								
Crosier-----	0-11	.37	.37	4	5	56	200	1.0
	11-30	.32	.37					
	30-38	.37	.43					
	38-80	.37	.43					
<b>CvdB:</b>								
Crosier-----	0-11	.37	.37	4	5	56	200	3.0
	11-30	.32	.37					
	30-38	.37	.43					
	38-80	.37	.43					
<b>CwkA:</b>								
Crumstown-----	0-9	.17	.17	4	3	86	200	1.0
	9-19	.15	.15					
	19-45	.10	.10					
	45-100	.02	.02					
<b>CwkB:</b>								
Crumstown-----	0-9	.17	.17	4	2	134	200	3.0
	9-19	.15	.15					
	19-45	.10	.10					
	45-100	.02	.02					
<b>DcrA:</b>								
Del Rey-----	0-9	.43	.43	4	7	38	150	1.0
	9-33	.43	.43					
	33-90	.43	.43					
<b>EchAN:</b>								
Edwards, drained-----	0-9	---	---	1	2	134	200	0.5
	9-24	---	---					
	24-80	.28	.28					
<b>EchAU:</b>								
Edwards, undrained-----	0-24	---	---	1	2	134	200	0.5
	24-80	.28	.28					
<b>EcrAN:</b>								
Edselton, drained-----	0-10	---	---	1	2	134	200	1.0
	10-21	---	---					
	21-48	.28	.28					
	48-80	.15	.15					
<b>EcrAU:</b>								
Edselton, undrained-----	0-21	---	---	1	2	134	200	1.0
	21-48	.28	.28					
	48-80	.15	.15					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
<b>EmeA:</b>								
Elston-----	0-20	.15	.15	4	3	86	300	1.0
	20-34	.15	.15					
	34-72	.10	.10					
	72-80	.02	.10					
<b>GczA:</b>								
Gilford-----	0-14	.15	.15	4	3	86	200	1.0
	14-32	.10	.10					
	32-38	.02	.02					
	38-80	.02	.02					
<b>GdnA:</b>								
Gilford-----	0-14	.10	.10	4	3	86	200	1.0
	14-32	.10	.10					
	32-38	.02	.02					
	38-80	.02	.02					
<b>HfbAN:</b>								
Henrietta, drained----	0-12	---	---	2	2	134	200	1.0
	12-43	.28	.28					
	43-60	.28	.28					
<b>HfbAU:</b>								
Henrietta, undrained----	0-12	---	---	2	2	134	200	1.0
	12-43	.28	.28					
	43-80	.28	.28					
<b>HkkA:</b>								
Hillsdale-----	0-8	.20	.20	5	3	86	200	1.0
	8-14	.17	.20					
	14-44	.20	.20					
	44-84	.28	.32					
<b>HkkB:</b>								
Hillsdale-----	0-8	.20	.20	5	3	86	200	3.0
	8-14	.17	.20					
	14-44	.20	.20					
	44-84	.28	.32					
<b>HknC2:</b>								
Hillsdale-----	0-5	.20	.20	5	3	86	150	7.0
	5-14	.17	.20					
	14-44	.20	.20					
	44-84	.28	.32					
<b>Oshtemo-----</b>	0-6	.17	.17	4	3	86	150	7.0
	6-14	.20	.20					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
<b>HknD2:</b>								
Hillsdale-----	0-5	.20	.20	5	3	86	150	14.0
	5-14	.17	.20					
	14-44	.20	.20					
	44-84	.28	.32					
<b>Oshtemo-----</b>	0-6	.17	.17	4	3	86	150	14.0
	6-14	.20	.20					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					



Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
<b>HkpC2:</b>								
Hillsdale-----	0-5	.20	.20	5	3	86	150	7.0
	5-14	.17	.20					
	14-44	.20	.20					
	44-84	.28	.32					
Tracy-----	0-5	.24	.24	5	3	86	200	7.0
	5-47	.17	.20					
	47-60	.10	.15					
	60-86	.10	.15					
<b>HkpD2:</b>								
Hillsdale-----	0-5	.20	.20	5	3	86	150	14.0
	5-14	.17	.20					
	14-44	.20	.20					
	44-84	.28	.32					
Tracy-----	0-5	.24	.24	5	3	86	200	14.0
	5-47	.17	.20					
	47-60	.10	.15					
	60-86	.10	.15					
<b>HtbAN:</b>								
Houghton, drained-----	0-9	---	---	3	2	134	200	1.0
	9-80	---	---					
<b>HtbAU:</b>								
Houghton, undrained-----	0-80	---	---	3	2	134	200	1.0
<b>JaaAK:</b>								
Jamestown-----	0-11	.32	.32	4	5	48	100	1.0
	11-33	.32	.32					
	33-44	.28	.32					
	44-52	.10	.10					
	52-80	.43	.49					
<b>MfaA:</b>								
Martinsville-----	0-13	.37	.37	5	5	56	200	1.0
	13-35	.28	.28					
	35-53	.28	.28					
	53-60	.37	.37					
<b>MfaB2:</b>								
Martinsville-----	0-5	.37	.37	5	5	56	200	3.0
	5-35	.28	.28					
	35-53	.28	.28					
	53-60	.37	.37					
<b>MfaC2:</b>								
Martinsville-----	0-5	.37	.37	5	5	56	200	7.0
	5-35	.28	.28					
	35-53	.28	.28					
	53-60	.37	.37					
<b>MfrAN:</b>								
Madaus, drained-----	0-9	---	---	1	2	134	200	1.0
	9-48	.28	.28					
	48-80	.17	.17					
<b>MfrAU:</b>								
Madaus, undrained-----	0-9	---	---	1	2	134	200	1.0
	9-48	.28	.28					
	48-80	.17	.17					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
<b>MgcA:</b>								
Maumee-----	0-23	.05	.05	5	2	134	150	1.0
	23-61	.10	.10					
	61-80	.10	.10					
<b>MgdAN:</b>								
Martisco, drained-----	0-12	---	---	1	2	134	200	0.5
	12-80	.28	.28					
<b>MhaA:</b>								
Maumee-----	0-23	.05	.05	5	2	134	150	1.0
	23-61	.10	.10					
	61-80	.10	.10					
<b>MhbA:</b>								
Maumee-----	0-23	.05	.05	5	2	134	150	1.0
	23-61	.10	.10					
	61-80	.10	.10					
<b>MmbC2:</b>								
Miami-----	0-5	.37	.37	4	5	56	150	7.0
	5-31	.32	.32					
	31-36	.37	.43					
	36-80	.32	.37					
<b>MmdC3:</b>								
Miami-----	0-4	.32	.32	3	6	48	150	7.0
	4-31	.32	.32					
	31-36	.37	.43					
	36-80	.32	.37					
<b>MmdD3:</b>								
Miami-----	0-4	.32	.32	3	6	48	150	14.0
	4-31	.32	.32					
	31-36	.37	.43					
	36-80	.32	.37					
<b>MouA:</b>								
Milford-----	0-18	.28	.28	5	6	48	300	1.0
	18-50	.43	.43					
	50-60	.43	.43					
<b>MsaA:</b>								
Mishawaka-----	0-12	.05	.05	3	3	86	300	1.0
	12-18	.05	.05					
	18-25	.05	.05					
	25-58	.02	.02					
	58-80	.02	.02					
<b>MtsB2:</b>								
Morley-----	0-5	.43	.43	4	6	48	150	4.0
	5-20	.32	.32					
	20-29	.32	.32					
	29-80	.32	.37					
<b>MtsC2:</b>								
Morley-----	0-5	.43	.43	4	6	48	150	9.0
	5-20	.32	.32					
	20-29	.32	.32					
	29-80	.32	.37					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
MubD3:								
Morley-----	0-4	.32	.32	3	7	38	150	15.0
	4-20	.32	.32					
	20-29	.32	.32					
	29-80	.32	.37					
MvhAN:								
Moston, drained-----	0-8	---	---	1	2	134	200	1.0
	8-24	---	---					
	24-48	.28	.28					
	48-80	.15	.15					
MvhAU:								
Moston, undrained-----	0-24	---	---	1	2	134	200	1.0
	24-48	.28	.28					
	48-80	.15	.15					
MvkA:								
Morocco-----	0-9	.05	.05	5	2	134	300	1.0
	9-60	.02	.02					
	60-80	.02	.02					
MwzAN:								
Muskego, drained-----	0-9	---	---	1	2	134	200	1.0
	9-27	---	---					
	27-80	.28	.28					
MwzAU:								
Muskego, undrained-----	0-27	---	---	1	2	134	200	1.0
	27-80	.28	.28					
OkrA:								
Oshtemo-----	0-9	.17	.17	4	3	86	200	1.0
	9-14	.17	.17					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
OkrB:								
Oshtemo-----	0-9	.17	.17	4	2	134	200	3.0
	9-14	.17	.17					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
OkrC2:								
Oshtemo-----	0-6	.17	.17	4	2	134	200	7.0
	6-14	.17	.17					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
OkrD:								
Oshtemo-----	0-9	.17	.17	4	2	134	200	14.0
	9-14	.17	.17					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
<b>OlcA:</b>								
Oshtemo-----	0-9	.17	.17	4	3	86	200	1.0
	9-14	.20	.20					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
<b>OlcB:</b>								
Oshtemo-----	0-9	.17	.17	4	3	86	200	3.0
	9-14	.20	.20					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
<b>OlcC2:</b>								
Oshtemo-----	0-6	.17	.17	4	3	86	150	7.0
	6-14	.20	.20					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
<b>OlcD:</b>								
Oshtemo-----	0-9	.17	.17	4	3	86	150	14.0
	9-14	.20	.20					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
<b>OmgA:</b>								
Osolo-----	0-9	.05	.05	5	2	134	300	1.0
	9-25	.15	.15					
	25-40	.02	.02					
	40-80	.02	.02					
<b>PaaAN:</b>								
Palms, drained-----	0-35	---	---	2	2	134	200	1.0
	35-80	.37	.37					
<b>PaaAU:</b>								
Palms, undrained-----	0-35	---	---	2	2	134	200	1.0
	35-80	.37	.37					
<b>Pmg:</b>								
Pits, gravel-----	---	---	---	---	---	---	50	15.0
<b>Px1A:</b>								
Psammaquents-----	---	---	---	---	---	---	75	0.5
<b>Pxo:</b>								
Psammments-----	---	---	---	---	---	---	75	3.0
<b>QuiA:</b>								
Quinn-----	0-7	.28	.28	4	5	56	300	1.0
	7-47	.24	.24					
	47-80	.05	.10					
<b>QujA:</b>								
Quinn-----	0-7	.15	.15	4	5	56	300	1.0
	7-47	.24	.24					
	47-80	.05	.10					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
<b>RenA:</b>								
Rensselaer-----	0-15	.24	.24	5	5	56	250	1.0
	15-38	.24	.24					
	38-42	.20	.20					
	42-76	.37	.37					
	76-80	.43	.49					
<b>ReyA:</b>								
Rensselaer-----	0-15	.24	.24	5	5	56	250	1.0
	15-38	.24	.24					
	38-42	.20	.20					
	42-76	.37	.37					
	76-80	.43	.49					
<b>RopA:</b>								
Riddles-----	0-8	.28	.28	5	3	86	200	1.0
	8-13	.32	.32					
	13-33	.32	.32					
	33-63	.37	.43					
	63-90	.24	.24					
	90-100	.32	.37					
<b>Oshtemo-----</b>	0-9	.17	.17	4	3	86	200	1.0
	9-14	.17	.17					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
<b>RopB:</b>								
Riddles-----	0-8	.28	.28	5	3	86	200	3.0
	8-13	.32	.32					
	13-33	.32	.32					
	33-63	.37	.43					
	63-90	.24	.24					
	90-100	.32	.37					
<b>Oshtemo-----</b>	0-9	.17	.17	4	2	134	200	3.0
	9-14	.17	.17					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
<b>RopC2:</b>								
Riddles-----	0-5	.28	.28	5	3	86	200	7.0
	5-13	.32	.32					
	13-33	.32	.32					
	33-63	.37	.43					
	63-90	.24	.24					
	90-100	.32	.37					
<b>Oshtemo-----</b>	0-6	.17	.17	4	3	86	200	7.0
	6-14	.17	.17					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
<b>RopD2:</b>								
Riddles-----	0-5	.28	.28	5	3	86	200	14.0
	5-13	.32	.32					
	13-33	.32	.32					
	33-63	.37	.43					
	63-90	.24	.24					
	90-100	.32	.37					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
RopD2:								
Oshtemo-----	0-6	.17	.17	4	3	86	200	14.0
	6-14	.17	.17					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
RoqB:								
Riddles-----	0-8	.28	.28	5	5	56	200	3.0
	8-13	.32	.32					
	13-33	.32	.32					
	33-63	.37	.43					
	63-90	.24	.24					
	90-100	.32	.37					
Metea-----	0-9	.17	.17	4	2	134	200	3.0
	9-28	.15	.15					
	28-32	.20	.20					
	32-44	.37	.37					
	44-80	.37	.43					
RoqC2:								
Riddles-----	0-5	.28	.28	5	5	56	200	7.0
	5-13	.32	.32					
	13-33	.32	.32					
	33-63	.37	.43					
	63-90	.24	.24					
	90-100	.32	.37					
Metea-----	0-7	.17	.17	4	2	134	200	7.0
	7-28	.15	.15					
	28-32	.20	.20					
	32-44	.37	.37					
	44-80	.37	.43					
RoqD2:								
Riddles-----	0-5	.28	.28	5	5	56	150	14.0
	5-13	.32	.32					
	13-33	.32	.32					
	33-63	.37	.43					
	63-90	.24	.24					
	90-100	.32	.37					
Metea-----	0-7	.17	.17	4	2	134	150	14.0
	7-28	.15	.15					
	28-32	.20	.20					
	32-44	.37	.37					
	44-80	.37	.43					
SdzA:								
Selfridge-----	0-11	.17	.17	5	2	134	200	1.0
	11-25	.15	.15					
	25-29	.24	.24					
	29-32	.24	.24					
	32-80	.37	.43					
Crosier-----	0-11	.37	.37	4	5	56	200	1.0
	11-30	.32	.37					
	30-38	.37	.43					
	38-80	.37	.43					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
<b>SdzaB:</b>								
Selfridge-----	0-11	.17	.17	5	2	134	200	3.0
	11-25	.15	.15					
	25-29	.24	.24					
	29-32	.24	.24					
	32-80	.37	.43					
<b>Brems-----</b>	0-9	.05	.05	5	2	134	150	3.0
	9-27	.05	.05					
	27-72	.02	.02					
	72-80	.02	.02					
<b>SesA:</b>								
Schoolcraft-----	0-14	.28	.28	4	5	56	165	1.0
	14-29	.28	.28					
	29-39	.17	.24					
	39-77	.05	.05					
	77-95	.02	.02					
<b>Sn1A:</b>								
Southwest-----	0-10	.37	.37	5	6	48	200	1.0
	10-23	.37	.37					
	23-34	.28	.28					
	34-45	.37	.37					
	45-75	.28	.28					
	75-80	.43	.43					
<b>TmpA:</b>								
Tracy-----	0-9	.24	.24	5	3	86	200	1.0
	9-47	.17	.20					
	47-60	.10	.15					
	60-86	.10	.15					
<b>TmpB:</b>								
Tracy-----	0-9	.24	.24	5	3	86	200	3.0
	9-47	.17	.20					
	47-60	.10	.15					
	60-86	.10	.15					
<b>TmpC2:</b>								
Tracy-----	0-5	.24	.24	5	3	86	200	7.0
	5-47	.17	.20					
	47-60	.10	.15					
	60-86	.10	.15					
<b>TmpD:</b>								
Tracy-----	0-9	.24	.24	5	3	86	200	14.0
	9-47	.17	.20					
	47-60	.10	.15					
	60-86	.10	.15					
<b>TnwA:</b>								
Troxel-----	0-50	.20	.20	5	6	48	200	1.0
	50-70	.37	.37					
	70-91	.28	.28					
<b>TxuA:</b>								
Tyner-----	0-12	.10	.10	5	2	134	300	1.0
	12-20	.10	.10					
	20-41	.05	.05					
	41-80	.02	.02					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
<b>TxuB:</b>								
Tyner-----	0-12	.10	.10	5	2	134	200	3.0
	12-20	.10	.10					
	20-41	.05	.05					
	41-80	.02	.02					
<b>TxuC:</b>								
Tyner-----	0-12	.10	.10	5	2	134	150	7.0
	12-20	.10	.10					
	20-41	.05	.05					
	41-80	.02	.02					
<b>TxuD:</b>								
Tyner-----	0-12	.10	.10	5	2	134	100	14.0
	12-20	.10	.10					
	20-41	.05	.05					
	41-80	.02	.02					
<b>TxuF:</b>								
Tyner-----	0-12	.10	.10	5	2	134	100	32.0
	12-20	.10	.10					
	20-41	.05	.05					
	41-80	.02	.02					
<b>Uam:</b>								
Udorthents, loamy-----	---	---	---	---	---	---	100	6.0
<b>UdeA:</b>								
Urban land.								
Bainter-----	0-9	.17	.20	4	3	86	300	1.0
	9-13	.17	.20					
	13-31	.10	.10					
	31-44	.05	.10					
	44-54	.20	.20					
	54-80	.02	.02					
<b>UdeB:</b>								
Urban land.								
Bainter-----	0-9	.17	.20	4	3	86	200	3.0
	9-13	.17	.20					
	13-31	.10	.10					
	31-44	.05	.10					
	44-54	.20	.20					
	54-80	.02	.02					
<b>UdeC:</b>								
Urban land.								
Bainter-----	0-5	.17	.20	4	3	86	200	7.0
	5-13	.17	.20					
	13-31	.10	.10					
	31-44	.05	.10					
	44-54	.20	.20					
	54-80	.02	.02					
<b>UdkA:</b>								
Urban land.								
Brady-----	0-9	.15	.15	4	3	86	300	1.0
	9-37	.24	.24					
	37-56	.20	.20					
	56-80	.10	.05					



Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
UdzA: Urban land.								
Auten-----	0-9	.20	.20	4	5	56	300	1.0
	9-22	.32	.37					
	22-80	.05	.10					
UeaA: Urban land.								
Crosier-----	0-11	.37	.37	4	5	56	200	2.0
	11-30	.32	.37					
	30-38	.37	.43					
	38-80	.37	.43					
UeqA: Urban land.								
Gilford-----	0-14	.15	.15	4	3	86	200	1.0
	14-32	.10	.10					
	32-38	.02	.02					
	38-80	.02	.02					
UewA: Urban land.								
Brems-----	0-9	.05	.05	5	2	134	300	1.0
	9-27	.05	.05					
	27-72	.02	.02					
	72-80	.02	.02					
Morocco-----	0-9	.05	.05	5	2	134	300	1.0
	9-60	.02	.02					
	60-80	.02	.02					
UfbA: Urban land.								
Brookston-----	0-9	.24	.24	5	5	56	250	1.0
	9-48	.20	.24					
	48-68	.28	.32					
	68-80	.43	.49					
UfhA: Urban land.								
Coloma-----	0-12	.05	.05	5	1	250	200	1.0
	12-47	.15	.15					
	47-80	.15	.15					
UfhB: Urban land.								
Coloma-----	0-12	.05	.05	5	1	250	150	4.0
	12-47	.15	.15					
	47-80	.15	.15					
UfhC: Urban land.								
Coloma-----	0-12	.05	.05	5	1	250	100	7.0
	12-47	.15	.15					
	47-80	.15	.15					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
UfmA: Urban land.								
Coupee-----	0-21	.37	.37	4	5	56	300	1.0
	21-33	.32	.32					
	33-52	.10	.15					
	52-98	.02	.10					
UfrA: Urban land.								
Del Rey-----	0-9	.43	.43	4	7	38	150	1.0
	9-33	.43	.43					
	33-90	.43	.43					
UftA: Urban land.								
Elston-----	0-20	.15	.15	4	3	86	300	1.0
	20-34	.15	.15					
	34-72	.10	.10					
	72-80	.02	.10					
UfzA: Urban land.								
Mishawaka-----	0-12	.05	.05	3	3	86	300	1.0
	12-18	.05	.05					
	18-25	.05	.05					
	25-58	.02	.02					
	58-80	.02	.02					
UgaA: Urban land.								
Morocco-----	0-9	.05	.05	5	2	134	300	1.0
	9-60	.02	.02					
	60-80	.02	.02					
UglA: Urban land.								
Osolo-----	0-9	.05	.05	5	2	134	300	1.0
	9-25	.15	.15					
	25-40	.02	.02					
	40-80	.02	.02					
UgrA: Urban land.								
Rensselaer-----	0-15	.24	.24	5	5	56	250	1.0
	15-38	.24	.24					
	38-42	.20	.20					
	42-76	.37	.37					
	76-80	.43	.49					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
<b>UgsA:</b>								
Urban land.								
Riddles-----	0-8	.28	.28	5	3	86	200	1.0
	8-13	.32	.32					
	13-33	.32	.32					
	33-63	.37	.43					
	63-90	.24	.24					
	90-100	.32	.37					
Oshtemo-----	0-9	.17	.17	4	3	86	200	1.0
	9-14	.17	.17					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
<b>UgsB:</b>								
Urban land.								
Riddles-----	0-8	.28	.28	5	3	86	200	3.0
	8-13	.32	.32					
	13-33	.32	.32					
	33-63	.37	.43					
	63-90	.24	.24					
	90-100	.32	.37					
Oshtemo-----	0-9	.17	.17	4	2	134	200	3.0
	9-14	.17	.17					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
<b>UgvA:</b>								
Urban land.								
Tyner-----	0-12	.10	.10	5	2	134	300	1.0
	12-20	.10	.10					
	20-41	.05	.05					
	41-80	.02	.02					
<b>UgvB:</b>								
Urban land.								
Tyner-----	0-12	.10	.10	5	2	134	200	3.0
	12-20	.10	.10					
	20-41	.05	.05					
	41-80	.02	.02					
<b>UgvC:</b>								
Urban land.								
Tyner-----	0-12	.10	.10	5	2	134	150	7.0
	12-20	.10	.10					
	20-41	.05	.05					
	41-80	.02	.02					
<b>UgvD:</b>								
Urban land.								
Tyner-----	0-12	.10	.10	5	2	134	100	14.0
	12-20	.10	.10					
	20-41	.05	.05					
	41-80	.02	.02					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
UhmA: Urban land.								
Hillsdale-----	0-8	.20	.20	5	3	86	200	1.0
	8-14	.17	.20					
	14-44	.20	.20					
	44-84	.28	.32					
UhmB: Urban land.								
Hillsdale-----	0-8	.20	.20	5	3	86	200	3.0
	8-14	.17	.20					
	14-44	.20	.20					
	44-84	.28	.32					
UhoC: Urban land.								
Hillsdale-----	0-8	.20	.20	5	3	86	150	7.0
	8-14	.17	.20					
	14-44	.20	.20					
	44-84	.28	.32					
Oshtemo-----	0-9	.17	.17	4	3	86	150	7.0
	9-14	.20	.20					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
UhoD: Urban land.								
Hillsdale-----	0-8	.20	.20	5	3	86	150	14.0
	8-14	.17	.20					
	14-44	.20	.20					
	44-84	.28	.32					
Oshtemo-----	0-9	.17	.17	4	3	86	150	14.0
	9-14	.20	.20					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
UhpC: Urban land.								
Hillsdale-----	0-8	.20	.20	5	3	86	150	7.0
	8-14	.17	.20					
	14-44	.20	.20					
	44-84	.28	.32					
Tracy-----	0-5	.24	.24	5	3	86	200	7.0
	5-47	.17	.20					
	47-60	.10	.15					
	60-86	.10	.15					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
UhpD: Urban land.								
Hillsdale-----	0-8	.20	.20	5	3	86	150	14.0
	8-14	.17	.20					
	14-44	.20	.20					
	44-84	.28	.32					
Tracy-----	0-5	.24	.24	5	3	86	200	14.0
	5-47	.17	.20					
	47-60	.10	.15					
	60-86	.10	.15					
UhwA: Urban land.								
Martinsville-----	0-13	.37	.37	5	5	56	200	1.0
	13-35	.28	.28					
	35-53	.28	.28					
	53-60	.37	.37					
UhwB: Urban land.								
Martinsville-----	0-5	.37	.37	5	5	56	200	3.0
	5-35	.28	.28					
	35-53	.28	.28					
	53-60	.37	.37					
UhwC: Urban land.								
Martinsville-----	0-5	.37	.37	5	5	56	200	7.0
	5-35	.28	.28					
	35-53	.28	.28					
	53-60	.37	.37					
UkaA: Urban land.								
Maumee-----	0-23	.05	.05	5	2	134	150	1.0
	23-61	.10	.10					
	61-80	.10	.10					
UkeA: Urban land.								
Milford-----	0-18	.28	.28	5	6	48	300	1.0
	18-50	.43	.43					
	50-60	.43	.43					
Ukx A: Urban land.								
Oshtemo-----	0-9	.17	.17	4	3	86	200	1.0
	9-14	.20	.20					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
UkxB: Urban land.								
Oshtemo-----	0-9	.17	.17	4	3	86	200	3.0
	9-14	.20	.20					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
UkxC: Urban land.								
Oshtemo-----	0-9	.17	.17	4	3	86	150	7.0
	9-14	.20	.20					
	14-35	.20	.20					
	35-60	.17	.17					
	60-80	.02	.10					
UmfB: Urban land.								
Riddles-----	0-8	.28	.28	5	5	56	200	3.0
	8-13	.32	.32					
	13-33	.32	.32					
	33-63	.37	.43					
	63-90	.24	.24					
	90-100	.32	.37					
Metea-----	0-9	.17	.17	4	2	134	200	3.0
	9-28	.15	.15					
	28-32	.20	.20					
	32-44	.37	.37					
	44-80	.37	.43					
UmfC: Urban land.								
Riddles-----	0-5	.28	.28	5	5	56	200	7.0
	5-13	.32	.32					
	13-33	.32	.32					
	33-63	.37	.43					
	63-90	.24	.24					
	90-100	.32	.37					
Metea-----	0-7	.17	.17	4	2	134	200	7.0
	7-28	.15	.15					
	28-32	.20	.20					
	32-44	.37	.37					
	44-80	.37	.43					
UmfD: Urban land.								
Riddles-----	0-5	.28	.28	5	5	56	150	14.0
	5-13	.32	.32					
	13-33	.32	.32					
	33-63	.37	.43					
	63-90	.24	.24					
	90-100	.32	.37					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
UmfD:								
Metea-----	0-7	.17	.17	4	2	134	150	14.0
	7-28	.15	.15					
	28-32	.20	.20					
	32-44	.37	.37					
	44-80	.37	.43					
UmpA:								
Urban land.								
Schoolcraft-----	0-14	.28	.28	4	5	56	165	1.0
	14-29	.28	.28					
	29-39	.17	.24					
	39-77	.05	.05					
	77-95	.02	.02					
UmuA:								
Urban land.								
Southwest-----	0-10	.37	.37	5	6	48	200	1.0
	10-23	.37	.37					
	23-34	.28	.28					
	34-45	.37	.37					
	45-75	.28	.28					
	75-80	.43	.43					
UmwA:								
Urban land.								
Tracy-----	0-9	.24	.24	5	3	86	200	1.0
	9-47	.17	.20					
	47-60	.10	.15					
	60-86	.10	.15					
UmwB:								
Urban land.								
Tracy-----	0-9	.24	.24	5	3	86	200	3.0
	9-47	.17	.20					
	47-60	.10	.15					
	60-86	.10	.15					
UmwC:								
Urban land.								
Tracy-----	0-5	.24	.24	5	3	86	200	7.0
	5-47	.17	.20					
	47-60	.10	.15					
	60-86	.10	.15					
UmwD:								
Urban land.								
Tracy-----	0-9	.24	.24	5	3	86	200	14.0
	9-47	.17	.20					
	47-60	.10	.15					
	60-86	.10	.15					

Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
UmxA: Urban land.								
Troxel-----	0-50	.20	.20	5	6	48	200	1.0
	50-70	.37	.37					
	70-91	.28	.28					
UnoA: Urban land.								
Whitaker-----	0-17	.28	.28	5	5	56	200	1.0
	17-39	.32	.32					
	39-48	.28	.32					
	48-86	.32	.32					
UnqB: Urban land.								
Williamstown-----	0-7	.37	.37	4	5	56	200	3.0
	7-34	.32	.32					
	34-39	.37	.43					
	39-80	.37	.49					
Crosier-----	0-11	.37	.37	4	5	56	200	3.0
	11-30	.32	.37					
	30-38	.37	.43					
	38-80	.37	.43					
UntA: Urban land.								
Wunabuna, drained-----	0-21	.37	.37	5	6	48	200	1.0
	21-32	.32	.32					
	32-38	.24	.24					
	38-80	---	---					
Usl: Udorthents, rubbish.								
W: Water.								
WcnAI: Waterford-----	0-8	.32	.32	4	5	56	100	1.0
	8-41	.37	.37					
	41-46	.02	.05					
	46-50	.02	.02					
	50-80	.02	.02					
WoaA: Williamstown-----	0-7	.37	.37	4	5	56	200	1.0
	7-34	.32	.32					
	34-39	.37	.43					
	39-80	.37	.49					
WoaB2: Williamstown-----	0-5	.37	.37	4	5	56	200	3.0
	5-34	.32	.32					
	34-39	.37	.43					
	39-80	.37	.49					



Table 17b.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodi- bility group	Wind erodi- bility index	Slope length (rv)	Slope gradient (rv)
		Kw	Kf	T				
	In						Ft	Pct
WoaC2:								
Williamstown-----	0-5	.37	.37	4	5	56	150	7.0
	5-34	.32	.32					
	34-39	.37	.43					
	39-80	.37	.49					
WobB:								
Williamstown-----	0-7	.37	.37	4	5	56	200	3.0
	7-34	.32	.32					
	34-39	.37	.43					
	39-80	.37	.49					
Crosier-----	0-11	.37	.37	4	5	56	200	3.0
	11-30	.32	.37					
	30-38	.37	.43					
	38-80	.37	.43					
WrxAN:								
Wunabuna, drained-----	0-21	.37	.37	5	6	48	200	1.0
	21-32	.32	.32					
	32-38	.24	.24					
	38-80	---	---					
WtbA:								
Whitaker-----	0-17	.28	.28	5	5	56	200	1.0
	17-39	.32	.32					
	39-48	.28	.32					
	48-86	.32	.32					
WujB:								
Williamstown-----	0-7	.37	.37	4	5	56	200	3.0
	7-34	.32	.32					
	34-39	.37	.43					
	39-80	.37	.49					
Moon-----	0-9	.17	.17	5	2	134	200	3.0
	9-23	.15	.15					
	23-35	.20	.20					
	35-45	.37	.37					
	45-80	.37	.43					

Table 18.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated. Properties are listed as low, representative, and high values separated by a hyphen. Low and high values reflect the normally expected range. Representative values are indicative of conditions that occur most commonly.)

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
<b>AahAK:</b>					
Abscota-----	0-5	3.0-9.0-15.0	---	6.1-6.7-7.3	0
	5-14	4.0-6.0-8.0	---	6.1-7.0-7.8	0
	14-60	1.0-1.5-2.0	---	6.1-7.3-8.4	0
<b>AatAN:</b>					
Ackerman, drained----	0-8	125.0-185.0-230.0	---	6.6-7.0-7.3	0-0-10
	8-14	20.0-84.0-100.0	---	5.6-7.0-7.8	0-1-20
	14-80	2.0-3.5-5.0	---	6.6-7.5-8.4	0-20-40
<b>AbhAN:</b>					
Adrian, drained-----	0-9	125.0-185.0-230.0	---	6.6-7.0-7.3	0-0-10
	9-34	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	34-80	1.0-2.0-3.0	---	6.1-7.0-8.4	0-20-40
<b>AbhAU:</b>					
Adrian, undrained----	0-34	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	34-80	1.0-2.0-3.0	---	6.1-7.0-8.4	0-20-40
<b>ApuAN:</b>					
Antung, drained-----	0-9	125.0-185.0-230.0	---	6.6-7.0-7.3	0-0-10
	9-12	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	12-80	1.0-2.0-3.0	---	5.6-7.0-8.4	0-20-40
<b>AxvA:</b>					
Auten-----	0-9	8.0-14.5-21.0	---	5.6-6.1-6.5	0
	9-22	8.0-14.0-20.0	---	5.1-6.2-7.3	0
	22-80	1.0-2.5-4.0	---	5.6-6.5-7.4	0-2-5
<b>BaaA:</b>					
Bainter-----	0-9	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	9-13	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	13-31	4.0-5.0-11.0	---	5.1-6.2-7.3	0
	31-44	4.0-6.0-20.0	---	5.1-6.5-7.8	0
	44-54	9.0-13.0-15.0	---	5.1-6.5-7.8	0
	54-80	1.0-2.0-3.0	---	7.4-7.9-8.4	0-15-30
<b>BaaB:</b>					
Bainter-----	0-9	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	9-13	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	13-31	4.0-5.0-11.0	---	5.1-6.2-7.3	0
	31-44	4.0-6.0-20.0	---	5.1-6.5-7.8	0
	44-54	9.0-13.0-15.0	---	5.1-6.5-7.8	0
	54-80	1.0-2.0-3.0	---	7.4-7.9-8.4	0-15-30
<b>BaaC2:</b>					
Bainter-----	0-5	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	5-13	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	13-31	4.0-5.0-11.0	---	5.1-6.2-7.3	0
	31-44	4.0-6.0-20.0	---	5.1-6.5-7.8	0
	44-54	9.0-13.0-15.0	---	5.1-6.5-7.8	0
	54-80	1.0-2.0-3.0	---	7.4-7.9-8.4	0-15-30

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
<b>BbmA:</b>					
Baugo-----	0-11	9.0-13.0-17.0	---	5.6-6.5-7.3	0
	11-29	12.0-16.0-20.0	---	5.6-6.5-7.3	0
	29-36	4.0-13.0-22.0	---	5.6-6.5-7.3	0
	36-56	1.0-2.0-3.0	---	6.1-7.3-8.4	0-13-25
	56-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35
<b>BmgA:</b>					
Blount-----	0-7	17.0-19.5-22.0	---	5.1-6.2-7.3	0
	7-23	21.0-25.5-30.0	---	4.5-5.5-6.5	0
	23-42	16.0-20.5-25.0	---	6.1-7.0-7.8	0-5-10
	42-80	16.0-20.5-25.0	---	7.4-7.9-8.4	5-18-30
<b>BshA:</b>					
Brady-----	0-9	5.0-12.5-20.0	---	5.1-6.2-7.3	0
	9-37	2.0-7.0-12.0	---	5.1-5.8-6.5	0
	37-56	2.0-7.0-12.0	---	5.1-6.2-7.3	0
	56-80	1.0-1.5-2.0	---	6.6-7.5-8.4	10-18-25
<b>BsxA:</b>					
Brems-----	0-9	3.0-4.0-5.0	---	5.1-6.2-7.3	0
	9-27	3.0-4.0-5.0	---	5.1-6.2-7.3	0
	27-72	1.0-2.0-5.0	1.0-2.0-3.0	4.5-5.3-6.0	0
	72-80	1.0-2.0-3.0	---	5.1-5.8-6.5	0
<b>Morocco-----</b>	0-9	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	9-60	1.0-2.0-5.0	1.0-3.5-6.0	4.5-5.3-6.0	0
	60-80	1.0-2.0-3.0	1.0-3.5-6.0	4.5-5.3-6.0	0
<b>BteA:</b>					
Brems-----	0-9	3.0-4.0-5.0	---	5.1-6.2-7.3	0
	9-27	3.0-4.0-5.0	---	5.1-6.2-7.3	0
	27-72	1.0-2.0-5.0	1.0-2.0-3.0	4.5-5.3-6.0	0
	72-80	1.0-2.0-3.0	---	5.1-5.8-6.5	0
<b>BuuA:</b>					
Brookston-----	0-9	20.0-22.0-24.0	---	6.1-6.7-7.3	0
	9-48	8.0-20.0-25.0	---	6.1-7.0-7.8	0
	48-68	3.0-9.5-16.0	---	6.1-7.3-8.4	0-8-15
	68-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35
<b>CmbAI:</b>					
Cohoctah-----	0-13	10.0-17.0-24.0	---	6.1-7.0-7.8	0-1-15
	13-56	3.0-8.0-19.0	---	6.1-7.3-8.4	0-5-20
	56-80	1.0-4.0-7.0	---	7.4-7.9-8.4	15-27-40
<b>CnbA:</b>					
Coloma-----	0-12	1.0-6.5-12.0	---	4.5-5.9-7.3	0
	12-47	0.1-4.6-9.0	---	4.5-5.9-7.3	0
	47-80	0.4-5.7-11.0	---	4.5-5.9-7.3	0
<b>CnbB:</b>					
Coloma-----	0-12	1.0-6.5-12.0	---	4.5-5.9-7.3	0
	12-47	0.1-4.6-9.0	---	4.5-5.9-7.3	0
	47-80	0.4-5.7-11.0	---	4.5-5.9-7.3	0
<b>CnbC:</b>					
Coloma-----	0-12	1.0-6.5-12.0	---	4.5-5.9-7.3	0
	12-47	0.1-4.6-9.0	---	4.5-5.9-7.3	0
	47-80	0.4-5.7-11.0	---	4.5-5.9-7.3	0

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
<b>CnbD:</b>					
Coloma-----	0-12	1.0-6.5-12.0	---	4.5-5.9-7.3	0
	12-47	0.1-4.6-9.0	---	4.5-5.9-7.3	0
	47-80	0.4-5.7-11.0	---	4.5-5.9-7.3	0
<b>CrrA:</b>					
Coupee-----	0-21	10.0-12.5-15.0	---	5.1-7.0-7.3	0
	21-33	9.0-16.0-23.0	---	4.5-5.6-6.0	0
	33-52	2.0-3.0-5.0	1.0-4.0-7.0	4.5-5.3-6.0	0
	52-98	1.0-2.0-3.0	1.0-2.5-4.0	4.5-5.3-6.0	0
<b>CvdA:</b>					
Crosier-----	0-11	7.0-12.0-17.0	---	5.6-6.5-7.3	0
	11-30	8.0-14.0-20.0	---	5.1-6.2-7.3	0
	30-38	3.0-9.5-16.0	---	6.1-7.3-8.4	0-8-15
	38-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35
<b>CvdB:</b>					
Crosier-----	0-11	7.0-12.0-17.0	---	5.6-6.5-7.3	0
	11-30	8.0-14.0-20.0	---	5.1-6.2-7.3	0
	30-38	3.0-9.5-16.0	---	6.1-7.3-8.4	0-8-15
	38-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35
<b>CwkA:</b>					
Crumstown-----	0-9	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	9-19	4.0-7.0-14.0	---	5.1-6.2-7.3	0
	19-45	2.0-4.0-8.0	---	5.6-6.1-6.5	0
	45-100	1.0-2.0-5.0	---	5.6-5.6-7.3	0
<b>CwkB:</b>					
Crumstown-----	0-9	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	9-19	4.0-7.0-14.0	---	5.1-6.2-7.3	0
	19-45	2.0-4.0-8.0	---	5.6-6.1-6.5	0
	45-100	1.0-2.0-5.0	---	5.6-5.6-7.3	0
<b>DcrA:</b>					
Del Rey-----	0-9	17.0-19.0-21.0	---	5.6-6.5-7.3	0
	9-33	18.0-21.0-24.0	---	4.5-5.9-7.3	0-5-10
	33-90	12.0-15.0-18.0	---	7.9-8.2-8.4	5-23-40
<b>EchAN:</b>					
Edwards, drained----	0-9	125.0-185.0-230.0	---	6.6-7.0-7.3	0-0-10
	9-24	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	24-80	1.0-8.0-10.0	---	7.8-8.1-8.4	50-70-90
<b>EchAU:</b>					
Edwards, undrained---	0-24	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	24-80	1.0-8.0-10.0	---	7.8-8.1-8.4	50-70-90
<b>EcrAN:</b>					
Edselton, drained----	0-10	125.0-185.0-230.0	---	6.6-7.0-7.3	0-0-10
	10-21	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	21-48	1.0-8.0-10.0	---	7.8-8.1-8.4	50-70-90
	48-80	1.0-4.0-7.0	---	7.8-8.1-8.4	0-20-40
<b>EcrAU:</b>					
Edselton, undrained--	0-21	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	21-48	1.0-8.0-10.0	---	7.8-8.1-8.4	50-70-90
	48-80	1.0-4.0-7.0	---	7.8-8.1-8.4	0-20-40

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
<b>EmeA:</b>					
Elston-----	0-20	5.0-12.0-19.0	---	5.1-6.2-7.3	0
	20-34	5.0-7.0-15.0	---	5.1-5.6-6.0	0
	34-72	3.0-4.0-8.0	---	5.1-5.6-6.5	0
	72-80	1.0-2.5-4.0	---	6.6-7.9-8.4	0-30-40
<b>GczA:</b>					
Gilford-----	0-14	6.0-13.0-20.0	---	5.6-6.5-7.3	0
	14-32	4.0-9.0-14.0	---	5.6-6.5-7.3	0
	32-38	1.0-5.0-9.0	---	6.1-6.7-7.3	0
	38-80	1.0-3.5-6.0	---	6.6-7.5-8.4	0-15-30
<b>GdnA:</b>					
Gilford-----	0-14	6.0-13.0-20.0	---	5.6-6.5-7.3	0
	14-32	4.0-9.0-14.0	---	5.6-6.5-7.3	0
	32-38	1.0-5.0-9.0	---	6.1-6.7-7.3	0
	38-80	1.0-3.5-6.0	---	6.6-7.5-8.4	0-15-30
<b>HfbAN:</b>					
Henrietta, drained---	0-12	125.0-185.0-230.0	---	6.6-7.0-7.3	0-0-10
	12-43	1.0-5.5-10.0	---	5.6-6.7-7.8	0
	43-60	1.0-5.5-10.0	---	7.9-8.2-8.4	10-20-30
<b>HfbAU:</b>					
Henrietta, undrained-	0-12	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	12-43	1.0-5.5-10.0	---	5.6-6.7-7.8	0
	43-80	1.0-5.5-10.0	---	7.9-8.2-8.4	10-20-30
<b>HkkA:</b>					
Hillsdale-----	0-8	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	8-14	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	14-44	5.0-7.0-13.0	---	4.5-5.5-6.5	0
	44-84	3.0-7.0-11.0	---	5.1-5.8-7.3	0
<b>HkkB:</b>					
Hillsdale-----	0-8	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	8-14	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	14-44	5.0-7.0-13.0	---	4.5-5.5-6.5	0
	44-84	3.0-7.0-11.0	---	5.1-5.8-7.3	0
<b>HknC2:</b>					
Hillsdale-----	0-5	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	5-14	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	14-44	5.0-7.0-13.0	---	4.5-5.5-6.5	0
	44-84	3.0-7.0-11.0	---	5.1-5.8-7.3	0
<b>Oshtemo-----</b>	0-6	4.0-9.0-12.0	---	5.6-6.5-7.3	0
	6-14	5.0-9.0-15.0	---	5.1-6.2-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
<b>HknD2:</b>					
Hillsdale-----	0-5	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	5-14	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	14-44	5.0-7.0-13.0	---	4.5-5.5-6.5	0
	44-84	3.0-7.0-11.0	---	5.1-5.8-7.3	0

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
<b>HknD2:</b>					
Oshtemo-----	0-6	4.0-9.0-12.0	---	5.6-6.5-7.3	0
	6-14	5.0-9.0-15.0	---	5.1-6.2-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
<b>HkpC2:</b>					
Hillsdale-----	0-5	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	5-14	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	14-44	5.0-7.0-13.0	---	4.5-5.5-6.5	0
	44-84	3.0-7.0-11.0	---	5.1-5.8-7.3	0
<b>Tracy-----</b>	0-5	4.0-5.0-8.0	5.0-9.5-14.0	4.5-5.0-5.5	0
	5-47	4.0-7.0-9.0	4.0-8.5-13.0	4.5-4.8-5.0	0
	47-60	3.0-10.0-12.0	2.0-9.0-16.0	4.5-4.8-5.0	0
	60-86	1.0-3.5-6.0	---	5.6-5.8-6.0	0
<b>HkpD2:</b>					
Hillsdale-----	0-5	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	5-14	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	14-44	5.0-7.0-13.0	---	4.5-5.5-6.5	0
	44-84	3.0-7.0-11.0	---	5.1-5.8-7.3	0
<b>Tracy-----</b>	0-5	4.0-5.0-8.0	5.0-9.5-14.0	4.5-5.0-5.5	0
	5-47	4.0-7.0-9.0	4.0-8.5-13.0	4.5-4.8-5.0	0
	47-60	3.0-10.0-12.0	2.0-9.0-16.0	4.5-4.8-5.0	0
	60-86	1.0-3.5-6.0	---	5.6-5.8-6.0	0
<b>HtbAN:</b>					
Houghton, drained---	0-9	125.0-185.0-230.0	---	6.6-7.0-7.3	0-0-10
	9-80	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
<b>HtbAU:</b>					
Houghton, undrained--	0-80	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
<b>JaaAK:</b>					
Jamestown-----	0-11	12.0-19.5-27.0	---	6.1-6.7-7.3	0
	11-33	8.0-16.5-25.0	---	6.1-6.7-7.3	0
	33-44	5.0-10.0-15.0	---	6.1-7.0-7.8	0
	44-52	2.0-4.0-6.0	---	6.1-7.0-7.8	0-3-5
	52-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35
<b>MfaA:</b>					
Martinsville-----	0-13	8.0-12.0-16.0	---	5.1-6.2-7.3	0
	13-35	9.0-15.5-22.0	---	5.1-5.8-6.5	0
	35-53	7.0-12.0-17.0	---	5.1-5.8-7.3	0
	53-60	1.0-7.0-13.0	---	7.4-7.4-8.4	15-23-45
<b>MfaB2:</b>					
Martinsville-----	0-5	8.0-12.0-16.0	---	5.1-6.2-7.3	0
	5-35	9.0-15.5-22.0	---	5.1-5.8-6.5	0
	35-53	7.0-12.0-17.0	---	5.1-5.8-7.3	0
	53-60	1.0-7.0-13.0	---	7.4-7.4-8.4	15-23-45
<b>MfaC2:</b>					
Martinsville-----	0-5	8.0-12.0-16.0	---	5.1-6.2-7.3	0
	5-35	9.0-15.5-22.0	---	5.1-5.8-6.5	0
	35-53	7.0-12.0-17.0	---	5.1-5.8-7.3	0
	53-60	1.0-7.0-13.0	---	7.4-7.4-8.4	15-23-45

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
<b>MfrAN:</b>					
Madaus, drained-----	0-9	125.0-185.0-230.0	---	6.6-7.0-7.3	0-0-10
	9-48	1.0-8.0-10.0	---	7.8-8.1-8.4	50-70-90
	48-80	1.0-2.0-3.0	---	7.4-7.9-8.4	0-20-40
<b>MfrAU:</b>					
Madaus, undrained----	0-9	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	9-48	1.0-8.0-10.0	---	7.8-8.1-8.4	50-70-90
	48-80	1.0-2.0-3.0	---	7.4-7.9-8.4	0-20-40
<b>MgcA:</b>					
Maumee-----	0-23	8.0-9.0-10.0	---	5.6-6.7-7.8	0
	23-61	1.0-4.5-8.0	---	5.6-6.5-7.3	0
	61-80	1.0-2.0-3.0	---	6.1-7.3-8.4	0-20-40
<b>MgdAN:</b>					
Martisco, drained----	0-12	125.0-185.0-230.0	---	6.6-7.0-7.3	0-0-10
	12-80	1.0-8.0-10.0	---	7.8-8.1-8.4	50-70-90
<b>MhaA:</b>					
Maumee-----	0-23	5.0-9.5-14.0	---	5.6-6.7-7.8	0
	23-61	1.0-4.5-8.0	---	5.6-6.5-7.3	0
	61-80	1.0-2.0-3.0	---	6.1-7.3-8.4	0-20-40
<b>MhbA:</b>					
Maumee-----	0-23	5.0-9.5-14.0	---	5.6-6.7-7.8	0
	23-61	1.0-4.5-8.0	---	5.6-6.5-7.3	0
	61-80	1.0-2.0-3.0	---	6.1-7.3-8.4	0-20-40
<b>MmbC2:</b>					
Miami-----	0-5	7.0-12.0-17.0	---	5.6-6.5-7.3	0
	5-31	9.0-16.0-23.0	---	5.1-5.6-6.5	0
	31-36	4.0-7.5-11.0	---	6.6-7.2-7.8	0-10-20
	36-80	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
<b>MmdC3:</b>					
Miami-----	0-4	10.0-15.5-21.0	---	5.6-6.5-7.3	0
	4-31	9.0-16.0-23.0	---	5.1-5.6-6.5	0
	31-36	4.0-7.5-11.0	---	6.6-7.2-7.8	0-10-20
	36-80	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
<b>MmdD3:</b>					
Miami-----	0-4	10.0-15.5-21.0	---	5.6-6.5-7.3	0
	4-31	9.0-16.0-23.0	---	5.1-5.6-6.5	0
	31-36	4.0-7.5-11.0	---	6.6-7.2-7.8	0-10-20
	36-80	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
<b>MouA:</b>					
Milford-----	0-18	14.0-21.0-28.0	---	5.6-6.5-7.3	0
	18-50	22.0-25.5-29.0	---	5.6-6.7-7.8	0-7-15
	50-60	4.0-11.0-18.0	---	6.6-7.5-8.4	0-15-30
<b>MsaA:</b>					
Mishawaka-----	0-12	10.0-13.0-16.0	---	5.1-6.5-7.3	0
	12-18	4.0-8.0-12.0	---	5.1-5.6-6.0	0
	18-25	2.0-6.5-11.0	---	5.1-5.6-6.0	0
	25-58	1.0-2.0-3.0	---	5.1-5.6-6.0	0
	58-80	1.0-2.0-3.0	---	5.1-5.6-6.0	0

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
<b>MtsB2:</b>					
Morley-----	0-5	12.0-17.0-22.0	---	5.1-6.2-7.3	0
	5-20	13.0-22.5-32.0	---	5.6-6.7-7.3	0
	20-29	12.0-19.0-26.0	---	5.6-7.3-7.8	0-5-30
	29-80	12.0-17.5-23.0	---	6.1-7.8-8.4	20-45-70
<b>MtsC2:</b>					
Morley-----	0-5	12.0-17.0-22.0	---	5.1-6.2-7.3	0
	5-20	13.0-22.5-32.0	---	5.6-6.7-7.3	0
	20-29	12.0-19.0-26.0	---	5.6-7.3-7.8	0-5-30
	29-80	12.0-17.5-23.0	---	6.1-7.8-8.4	20-45-70
<b>MubD3:</b>					
Morley-----	0-4	13.0-22.5-32.0	---	5.6-6.7-7.3	0
	4-20	13.0-22.5-32.0	---	5.6-6.7-7.3	0
	20-29	12.0-19.0-26.0	---	5.6-7.3-7.8	0-5-30
	29-80	12.0-17.5-23.0	---	6.1-7.8-8.4	20-45-70
<b>MvhAN:</b>					
Moston, drained----	0-8	125.0-185.0-230.0	---	6.6-7.0-7.3	0-0-10
	8-24	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	24-48	20.0-84.0-100.0	---	5.6-7.0-7.8	0-1-20
	48-80	1.0-2.0-3.0	---	6.6-7.5-8.4	0-20-40
<b>MvhAU:</b>					
Moston, undrained----	0-24	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	24-48	20.0-84.0-100.0	---	5.6-7.0-7.8	0-1-20
	48-80	1.0-2.0-3.0	---	6.6-7.5-8.4	0-20-40
<b>MvkA:</b>					
Morocco-----	0-9	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	9-60	1.0-2.0-5.0	1.0-3.5-6.0	4.5-5.3-6.0	0
	60-80	1.0-2.0-3.0	1.0-3.5-6.0	4.5-5.3-6.0	0
<b>MwzAN:</b>					
Muskego, drained----	0-9	125.0-185.0-230.0	---	6.6-7.0-7.3	0-0-10
	9-27	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	27-80	20.0-84.0-100.0	---	5.6-7.0-7.8	0-1-20
<b>MwzAU:</b>					
Muskego, undrained----	0-27	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	27-80	20.0-84.0-100.0	---	5.6-7.0-7.8	0-1-20
<b>OkrA:</b>					
Oshtemo-----	0-9	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	9-14	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
<b>OkrB:</b>					
Oshtemo-----	0-9	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	9-14	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40



Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
OkrC2:					
Oshtemo-----	0-6	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	6-14	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
OkrD:					
Oshtemo-----	0-9	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	9-14	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
OlcA:					
Oshtemo-----	0-9	4.0-9.0-12.0	---	5.6-6.5-7.3	0
	9-14	5.0-9.0-15.0	---	5.1-6.2-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
OlcB:					
Oshtemo-----	0-9	4.0-9.0-12.0	---	5.6-6.5-7.3	0
	9-14	5.0-9.0-15.0	---	5.1-6.2-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
OlcC2:					
Oshtemo-----	0-6	4.0-9.0-12.0	---	5.6-6.5-7.3	0
	6-14	5.0-9.0-15.0	---	5.1-6.2-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
OlcD:					
Oshtemo-----	0-9	4.0-9.0-12.0	---	5.6-6.5-7.3	0
	9-14	5.0-9.0-15.0	---	5.1-6.2-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
OmgA:					
Osolo-----	0-9	2.0-3.5-5.0	---	5.1-6.2-7.3	0
	9-25	1.0-2.0-3.0	---	5.1-6.2-7.3	0
	25-40	1.0-2.0-3.0	---	5.1-6.2-7.3	0
	40-80	1.0-2.0-3.0	---	5.1-6.2-7.3	0
PaaAN:					
Palms, drained-----	0-35	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	35-80	2.0-8.5-15.0	---	6.1-7.3-8.4	0-15-30
PaaAU:					
Palms, undrained-----	0-35	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
	35-80	2.0-8.5-15.0	---	6.1-7.3-8.4	0-15-30
Pmg:					
Pits, gravel.					
PxlA:					
Psammaquents.					

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
Pxo: Psamments.					
QuiA: Quinn-----	0-7	8.0-14.5-21.0	---	4.5-6.1-6.5	0
	7-47	3.0-5.0-10.0	3.0-7.0-11.0	4.5-5.0-5.5	0
	47-80	1.0-3.5-6.0	---	6.1-6.7-6.8	0
QujA: Quinn-----	0-7	10.0-13.0-16.0	---	4.5-6.5-7.3	0
	7-47	3.0-5.0-10.0	3.0-7.0-11.0	4.5-5.0-5.5	0
	47-80	1.0-3.5-6.0	---	6.1-6.7-6.8	0
RenA: Rensselaer-----	0-15	11.0-19.5-28.0	---	6.1-6.7-7.3	0
	15-38	10.0-18.5-27.0	---	6.1-6.7-7.3	0
	38-42	9.0-14.5-20.0	---	6.6-7.2-7.8	0-10-20
	42-76	4.0-9.0-14.0	---	7.4-7.9-8.4	15-28-40
	76-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35
ReyA: Rensselaer-----	0-15	11.0-19.5-28.0	---	6.1-6.7-7.3	0
	15-38	10.0-18.5-27.0	---	6.1-6.7-7.3	0
	38-42	9.0-14.5-20.0	---	6.6-7.2-7.8	0-10-20
	42-76	4.0-9.0-14.0	---	7.4-7.9-8.4	15-28-40
	76-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35
RopA: Riddles-----	0-8	3.0-8.0-13.0	---	5.6-6.5-7.3	0
	8-13	7.0-13.5-20.0	---	4.5-5.9-7.3	0
	13-33	6.0-12.0-18.0	---	6.6-7.2-7.8	0-13-25
	33-63	4.0-9.0-14.0	---	7.4-7.9-8.4	15-25-35
	63-90	2.0-6.5-11.0	---	5.1-6.2-7.3	0
	90-100	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Oshtemo-----	0-9	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	9-14	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
RopB: Riddles-----	0-8	3.0-8.0-13.0	---	5.6-6.5-7.3	0
	8-13	7.0-13.5-20.0	---	4.5-5.9-7.3	0
	13-33	6.0-12.0-18.0	---	6.6-7.2-7.8	0-13-25
	33-63	4.0-9.0-14.0	---	7.4-7.9-8.4	15-25-35
	63-90	2.0-6.5-11.0	---	5.1-6.2-7.3	0
	90-100	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Oshtemo-----	0-9	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	9-14	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
RopC2: Riddles-----	0-5	3.0-8.0-13.0	---	5.6-6.5-7.3	0
	5-13	7.0-13.5-20.0	---	4.5-5.9-7.3	0
	13-33	6.0-12.0-18.0	---	6.6-7.2-7.8	0-13-25
	33-63	4.0-9.0-14.0	---	7.4-7.9-8.4	15-25-35
	63-90	2.0-6.5-11.0	---	5.1-6.2-7.3	0
	90-100	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
<b>RopC2:</b>					
Oshtemo-----	0-6	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	6-14	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
<b>RopD2:</b>					
Riddles-----	0-5	3.0-8.0-13.0	---	5.6-6.5-7.3	0
	5-13	7.0-13.5-20.0	---	4.5-5.9-7.3	0
	13-33	6.0-12.0-18.0	---	6.6-7.2-7.8	0-13-25
	33-63	4.0-9.0-14.0	---	7.4-7.9-8.4	15-25-35
	63-90	2.0-6.5-11.0	---	5.1-6.2-7.3	0
	90-100	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Oshtemo-----	0-6	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	6-14	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
<b>RoqB:</b>					
Riddles-----	0-8	3.0-8.0-13.0	---	5.6-6.5-7.3	0
	8-13	7.0-13.5-20.0	---	4.5-5.9-7.3	0
	13-33	6.0-12.0-18.0	---	6.6-7.2-7.8	0-13-25
	33-63	4.0-9.0-14.0	---	7.4-7.9-8.4	15-25-35
	63-90	2.0-6.5-11.0	---	5.1-6.2-7.3	0
	90-100	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Metea-----	0-9	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	9-28	1.0-4.0-7.0	---	5.1-5.8-6.5	0
	28-32	6.0-10.0-15.0	---	5.6-6.1-6.5	0
	32-44	11.0-15.0-23.0	---	5.6-6.5-7.3	0
	44-80	5.0-9.5-14.0	---	5.6-7.0-8.4	0-20-40
<b>RoqC2:</b>					
Riddles-----	0-5	3.0-8.0-13.0	---	5.6-6.5-7.3	0
	5-13	7.0-13.5-20.0	---	4.5-5.9-7.3	0
	13-33	6.0-12.0-18.0	---	6.6-7.2-7.8	0-13-25
	33-63	4.0-9.0-14.0	---	7.4-7.9-8.4	15-25-35
	63-90	2.0-6.5-11.0	---	5.1-6.2-7.3	0
	90-100	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Metea-----	0-7	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	7-28	1.0-4.0-7.0	---	5.1-5.8-6.5	0
	28-32	6.0-10.0-15.0	---	5.6-6.1-6.5	0
	32-44	11.0-15.0-23.0	---	5.6-6.5-7.3	0
	44-80	5.0-9.5-14.0	---	5.6-7.0-8.4	0-20-40
<b>RoqD2:</b>					
Riddles-----	0-5	3.0-8.0-13.0	---	5.6-6.5-7.3	0
	5-13	7.0-13.5-20.0	---	4.5-5.9-7.3	0
	13-33	6.0-12.0-18.0	---	6.6-7.2-7.8	0-13-25
	33-63	4.0-9.0-14.0	---	7.4-7.9-8.4	15-25-35
	63-90	2.0-6.5-11.0	---	5.1-6.2-7.3	0
	90-100	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Metea-----	0-7	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	7-28	1.0-4.0-7.0	---	5.1-5.8-6.5	0
	28-32	6.0-10.0-15.0	---	5.6-6.1-6.5	0
	32-44	11.0-15.0-23.0	---	5.6-6.5-7.3	0
	44-80	5.0-9.5-14.0	---	5.6-7.0-8.4	0-20-40

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
<b>SdzA:</b>					
Selfridge-----	0-11	5.0-10.0-15.0	---	5.6-6.5-7.3	0
	11-25	1.0-5.5-10.0	---	5.1-6.2-7.3	0
	25-29	1.0-8.0-23.0	---	5.6-6.5-7.3	0
	29-32	7.0-15.0-23.0	---	5.6-6.5-7.3	0
	32-80	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Crosier-----	0-11	7.0-12.0-17.0	---	5.6-6.5-7.3	0
	11-30	8.0-14.0-20.0	---	5.1-6.2-7.3	0
	30-38	3.0-9.5-16.0	---	6.1-7.3-8.4	0-8-15
	38-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35
<b>SdzaB:</b>					
Selfridge-----	0-11	5.0-10.0-15.0	---	5.6-6.5-7.3	0
	11-25	1.0-5.5-10.0	---	5.1-6.2-7.3	0
	25-29	1.0-8.0-23.0	---	5.6-6.5-7.3	0
	29-32	7.0-15.0-23.0	---	5.6-6.5-7.3	0
	32-80	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Brms-----	0-9	3.0-4.0-5.0	---	5.1-6.2-7.3	0
	9-27	3.0-4.0-5.0	---	5.1-6.2-7.3	0
	27-72	1.0-2.0-5.0	1.0-2.0-3.0	4.5-5.3-6.0	0
	72-80	1.0-2.0-3.0	---	5.1-5.8-6.5	0
<b>SesA:</b>					
Schoolcraft-----	0-14	5.0-10.0-15.0	---	5.1-6.5-7.3	0
	14-29	3.0-20.0-25.0	---	4.5-5.5-7.3	0
	29-39	4.0-15.0-17.0	---	4.5-5.8-6.5	0
	39-77	1.0-3.5-6.0	---	4.5-5.9-7.3	0
	77-95	1.0-2.0-3.0	---	6.6-7.9-8.4	0-15-30
<b>Sn1A:</b>					
Southwest-----	0-10	10.0-20.0-30.0	---	6.1-6.7-7.3	0
	10-23	10.0-20.0-30.0	---	6.1-6.7-7.3	0
	23-34	20.0-28.0-36.0	---	6.1-6.7-7.3	0
	34-45	10.0-15.0-20.0	---	6.1-6.7-7.3	0
	45-75	10.0-21.5-33.0	---	6.1-6.7-7.8	0-7-15
	75-80	2.0-8.5-15.0	---	7.4-7.9-8.4	5-15-25
<b>TmpA:</b>					
Tracy-----	0-9	4.0-5.0-8.0	5.0-9.5-14.0	4.5-5.0-5.5	0
	9-47	4.0-7.0-9.0	4.0-8.5-13.0	4.5-4.8-5.0	0
	47-60	3.0-10.0-12.0	2.0-9.0-16.0	4.5-4.8-5.0	0
	60-86	1.0-3.5-6.0	---	5.6-5.8-6.0	0
<b>TmpB:</b>					
Tracy-----	0-9	4.0-5.0-8.0	5.0-9.5-14.0	4.5-5.0-5.5	0
	9-47	4.0-7.0-9.0	4.0-8.5-13.0	4.5-4.8-5.0	0
	47-60	3.0-10.0-12.0	2.0-9.0-16.0	4.5-4.8-5.0	0
	60-86	1.0-3.5-6.0	---	5.6-5.8-6.0	0
<b>TmpC2:</b>					
Tracy-----	0-5	4.0-5.0-8.0	5.0-9.5-14.0	4.5-5.0-5.5	0
	5-47	4.0-7.0-9.0	4.0-8.5-13.0	4.5-4.8-5.0	0
	47-60	3.0-10.0-12.0	2.0-9.0-16.0	4.5-4.8-5.0	0
	60-86	1.0-3.5-6.0	---	5.6-5.8-6.0	0
<b>TmpD:</b>					
Tracy-----	0-9	4.0-5.0-8.0	5.0-9.5-14.0	4.5-5.0-5.5	0
	9-47	4.0-7.0-9.0	4.0-8.5-13.0	4.5-4.8-5.0	0
	47-60	3.0-10.0-12.0	2.0-9.0-16.0	4.5-4.8-5.0	0
	60-86	1.0-3.5-6.0	---	5.6-5.8-6.0	0

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
<b>TnwA:</b>					
Troxel-----	0-50	14.0-20.0-26.0	---	5.6-6.1-6.5	0
	50-70	11.0-18.0-25.0	---	5.6-6.1-6.5	0
	70-91	5.0-9.0-13.0	---	5.6-6.7-7.8	0
<b>TxuA:</b>					
Tyner-----	0-12	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	12-20	2.0-4.0-6.0	---	4.5-5.9-7.3	0
	20-41	1.0-3.5-6.0	---	4.5-5.9-7.3	0
	41-80	1.0-2.0-3.0	---	4.5-5.9-7.3	0
<b>TxuB:</b>					
Tyner-----	0-12	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	12-20	2.0-4.0-6.0	---	4.5-5.9-7.3	0
	20-41	1.0-3.5-6.0	---	4.5-5.9-7.3	0
	41-80	1.0-2.0-3.0	---	4.5-5.9-7.3	0
<b>TxuC:</b>					
Tyner-----	0-12	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	12-20	2.0-4.0-6.0	---	4.5-5.9-7.3	0
	20-41	1.0-3.5-6.0	---	4.5-5.9-7.3	0
	41-80	1.0-2.0-3.0	---	4.5-5.9-7.3	0
<b>TxuD:</b>					
Tyner-----	0-12	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	12-20	2.0-4.0-6.0	---	4.5-5.9-7.3	0
	20-41	1.0-3.5-6.0	---	4.5-5.9-7.3	0
	41-80	1.0-2.0-3.0	---	4.5-5.9-7.3	0
<b>TxuF:</b>					
Tyner-----	0-12	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	12-20	2.0-4.0-6.0	---	4.5-5.9-7.3	0
	20-41	1.0-3.5-6.0	---	4.5-5.9-7.3	0
	41-80	1.0-2.0-3.0	---	4.5-5.9-7.3	0
<b>Uam:</b>					
Udorthents, loamy.					
<b>UdeA:</b>					
Urban land.					
Bainter-----	0-9	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	9-13	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	13-31	4.0-5.0-11.0	---	5.1-6.2-7.3	0
	31-44	4.0-6.0-20.0	---	5.1-6.5-7.8	0
	44-54	9.0-13.0-15.0	---	5.1-6.5-7.8	0
	54-80	1.0-2.0-3.0	---	7.4-7.9-8.4	0-15-30
<b>UdeB:</b>					
Urban land.					
Bainter-----	0-9	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	9-13	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	13-31	4.0-5.0-11.0	---	5.1-6.2-7.3	0
	31-44	4.0-6.0-20.0	---	5.1-6.5-7.8	0
	44-54	9.0-13.0-15.0	---	5.1-6.5-7.8	0
	54-80	1.0-2.0-3.0	---	7.4-7.9-8.4	0-15-30

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
UdeC: Urban land.					
Bainter-----	0-5	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	5-13	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	13-31	4.0-5.0-11.0	---	5.1-6.2-7.3	0
	31-44	4.0-6.0-20.0	---	5.1-6.5-7.8	0
	44-54	9.0-13.0-15.0	---	5.1-6.5-7.8	0
	54-80	1.0-2.0-3.0	---	7.4-7.9-8.4	0-15-30
UdkA: Urban land.					
Brady-----	0-9	5.0-12.5-20.0	---	5.1-6.2-7.3	0
	9-37	2.0-7.0-12.0	---	5.1-5.8-6.5	0
	37-56	2.0-7.0-12.0	---	5.1-6.2-7.3	0
	56-80	1.0-1.5-2.0	---	6.6-7.5-8.4	10-18-25
UdzA: Urban land.					
Auten-----	0-9	8.0-14.5-21.0	---	5.6-6.1-6.5	0
	9-22	8.0-14.0-20.0	---	5.1-6.2-7.3	0
	22-80	1.0-2.5-4.0	---	5.6-6.5-7.4	0-2-5
UeaA: Urban land.					
Crosier-----	0-11	7.0-12.0-17.0	---	5.6-6.5-7.3	0
	11-30	8.0-14.0-20.0	---	5.1-6.2-7.3	0
	30-38	3.0-9.5-16.0	---	6.1-7.3-8.4	0-8-15
	38-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35
UeqA: Urban land.					
Gilford-----	0-14	6.0-13.0-20.0	---	5.6-6.5-7.3	0
	14-32	4.0-9.0-14.0	---	5.6-6.5-7.3	0
	32-38	1.0-5.0-9.0	---	6.1-6.7-7.3	0
	38-80	1.0-3.5-6.0	---	6.6-7.5-8.4	0-15-30
UewA: Urban land.					
Brems-----	0-9	3.0-4.0-5.0	---	5.1-6.2-7.3	0
	9-27	3.0-4.0-5.0	---	5.1-6.2-7.3	0
	27-72	1.0-2.0-5.0	1.0-2.0-3.0	4.5-5.3-6.0	0
	72-80	1.0-2.0-3.0	---	5.1-5.8-6.5	0
Morocco-----	0-9	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	9-60	1.0-2.0-5.0	1.0-3.5-6.0	4.5-5.3-6.0	0
	60-80	1.0-2.0-3.0	1.0-3.5-6.0	4.5-5.3-6.0	0
UfbA: Urban land.					
Brookston-----	0-9	20.0-22.0-24.0	---	6.1-6.7-7.3	0
	9-48	8.0-20.0-25.0	---	6.1-7.0-7.8	0
	48-68	3.0-9.5-16.0	---	6.1-7.3-8.4	0-8-15
	68-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
<b>UfhA:</b> Urban land.					
Coloma-----	0-12	1.0-6.5-12.0	---	4.5-5.9-7.3	0
	12-47	0.1-4.6-9.0	---	4.5-5.9-7.3	0
	47-80	0.4-5.7-11.0	---	4.5-5.9-7.3	0
<b>UfhB:</b> Urban land.					
Coloma-----	0-12	1.0-6.5-12.0	---	4.5-5.9-7.3	0
	12-47	0.1-4.6-9.0	---	4.5-5.9-7.3	0
	47-80	0.4-5.7-11.0	---	4.5-5.9-7.3	0
<b>UfhC:</b> Urban land.					
Coloma-----	0-12	1.0-6.5-12.0	---	4.5-5.9-7.3	0
	12-47	0.1-4.6-9.0	---	4.5-5.9-7.3	0
	47-80	0.4-5.7-11.0	---	4.5-5.9-7.3	0
<b>UfmA:</b> Urban land.					
Coupee-----	0-21	10.0-12.5-15.0	---	5.1-7.0-7.3	0
	21-33	9.0-16.0-23.0	---	4.5-5.6-6.0	0
	33-52	2.0-3.0-5.0	1.0-4.0-7.0	4.5-5.3-6.0	0
	52-98	1.0-2.0-3.0	1.0-2.5-4.0	4.5-5.3-6.0	0
<b>UfrA:</b> Urban land.					
Del Rey-----	0-9	17.0-19.0-21.0	---	5.6-6.5-7.3	0
	9-33	18.0-21.0-24.0	---	4.5-5.9-7.3	0-5-10
	33-90	12.0-15.0-18.0	---	7.9-8.2-8.4	5-23-40
<b>UftA:</b> Urban land.					
Elston-----	0-20	5.0-12.0-19.0	---	5.1-6.2-7.3	0
	20-34	5.0-7.0-15.0	---	5.1-5.6-6.0	0
	34-72	3.0-4.0-8.0	---	5.1-5.6-6.5	0
	72-80	1.0-2.5-4.0	---	6.6-7.9-8.4	0-30-40
<b>UfzA:</b> Urban land.					
Mishawaka-----	0-12	10.0-13.0-16.0	---	5.1-6.5-7.3	0
	12-18	4.0-8.0-12.0	---	5.1-5.6-6.0	0
	18-25	2.0-6.5-11.0	---	5.1-5.6-6.0	0
	25-58	1.0-2.0-3.0	---	5.1-5.6-6.0	0
	58-80	1.0-2.0-3.0	---	5.1-5.6-6.0	0
<b>UgaA:</b> Urban land.					
Morocco-----	0-9	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	9-60	1.0-2.0-5.0	1.0-3.5-6.0	4.5-5.3-6.0	0
	60-80	1.0-2.0-3.0	1.0-3.5-6.0	4.5-5.3-6.0	0

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
Ug1A: Urban land.					
Osolo-----	0-9	2.0-3.5-5.0	---	5.1-6.2-7.3	0
	9-25	1.0-2.0-3.0	---	5.1-6.2-7.3	0
	25-40	1.0-2.0-3.0	---	5.1-6.2-7.3	0
	40-80	1.0-2.0-3.0	---	5.1-6.2-7.3	0
UgrA: Urban land.					
Rensselaer-----	0-15	11.0-19.5-28.0	---	6.1-6.7-7.3	0
	15-38	10.0-18.5-27.0	---	6.1-6.7-7.3	0
	38-42	9.0-14.5-20.0	---	6.6-7.2-7.8	0-10-20
	42-76	4.0-9.0-14.0	---	7.4-7.9-8.4	15-28-40
	76-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35
UgsA: Urban land.					
Riddles-----	0-8	3.0-8.0-13.0	---	5.6-6.5-7.3	0
	8-13	7.0-13.5-20.0	---	4.5-5.9-7.3	0
	13-33	6.0-12.0-18.0	---	6.6-7.2-7.8	0-13-25
	33-63	4.0-9.0-14.0	---	7.4-7.9-8.4	15-25-35
	63-90	2.0-6.5-11.0	---	5.1-6.2-7.3	0
	90-100	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Oshtemo-----	0-9	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	9-14	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
UgsB: Urban land.					
Riddles-----	0-8	3.0-8.0-13.0	---	5.6-6.5-7.3	0
	8-13	7.0-13.5-20.0	---	4.5-5.9-7.3	0
	13-33	6.0-12.0-18.0	---	6.6-7.2-7.8	0-13-25
	33-63	4.0-9.0-14.0	---	7.4-7.9-8.4	15-25-35
	63-90	2.0-6.5-11.0	---	5.1-6.2-7.3	0
	90-100	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Oshtemo-----	0-9	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	9-14	4.0-9.0-14.0	---	5.1-6.5-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
UgvA: Urban land.					
Tyner-----	0-12	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	12-20	2.0-4.0-6.0	---	4.5-5.9-7.3	0
	20-41	1.0-3.5-6.0	---	4.5-5.9-7.3	0
	41-80	1.0-2.0-3.0	---	4.5-5.9-7.3	0



Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
UgvB: Urban land.					
Tyner-----	0-12	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	12-20	2.0-4.0-6.0	---	4.5-5.9-7.3	0
	20-41	1.0-3.5-6.0	---	4.5-5.9-7.3	0
	41-80	1.0-2.0-3.0	---	4.5-5.9-7.3	0
UgvC: Urban land.					
Tyner-----	0-12	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	12-20	2.0-4.0-6.0	---	4.5-5.9-7.3	0
	20-41	1.0-3.5-6.0	---	4.5-5.9-7.3	0
	41-80	1.0-2.0-3.0	---	4.5-5.9-7.3	0
UgvD: Urban land.					
Tyner-----	0-12	3.0-4.0-5.0	---	4.5-5.9-7.3	0
	12-20	2.0-4.0-6.0	---	4.5-5.9-7.3	0
	20-41	1.0-3.5-6.0	---	4.5-5.9-7.3	0
	41-80	1.0-2.0-3.0	---	4.5-5.9-7.3	0
UhmA: Urban land.					
Hillsdale-----	0-8	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	8-14	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	14-44	5.0-7.0-13.0	---	4.5-5.5-6.5	0
	44-84	3.0-7.0-11.0	---	5.1-5.8-7.3	0
UhmB: Urban land.					
Hillsdale-----	0-8	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	8-14	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	14-44	5.0-7.0-13.0	---	4.5-5.5-6.5	0
	44-84	3.0-7.0-11.0	---	5.1-5.8-7.3	0
UhoC: Urban land.					
Hillsdale-----	0-8	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	8-14	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	14-44	5.0-7.0-13.0	---	4.5-5.5-6.5	0
	44-84	3.0-7.0-11.0	---	5.1-5.8-7.3	0
Oshtemo-----	0-9	4.0-9.0-12.0	---	5.6-6.5-7.3	0
	9-14	5.0-9.0-15.0	---	5.1-6.2-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
UhoD: Urban land.					
Hillsdale-----	0-8	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	8-14	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	14-44	5.0-7.0-13.0	---	4.5-5.5-6.5	0
	44-84	3.0-7.0-11.0	---	5.1-5.8-7.3	0

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
UhoD:					
Oshtemo-----	0-9	4.0-9.0-12.0	---	5.6-6.5-7.3	0
	9-14	5.0-9.0-15.0	---	5.1-6.2-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
UhpC:					
Urban land.					
Hillsdale-----	0-8	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	8-14	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	14-44	5.0-7.0-13.0	---	4.5-5.5-6.5	0
	44-84	3.0-7.0-11.0	---	5.1-5.8-7.3	0
Tracy-----	0-5	4.0-5.0-8.0	5.0-9.5-14.0	4.5-5.0-5.5	0
	5-47	4.0-7.0-9.0	4.0-8.5-13.0	4.5-4.8-5.0	0
	47-60	3.0-10.0-12.0	2.0-9.0-16.0	4.5-4.8-5.0	0
	60-86	1.0-3.5-6.0	---	5.6-5.8-6.0	0
UhpD:					
Urban land.					
Hillsdale-----	0-8	4.0-8.0-12.0	---	5.6-6.5-7.3	0
	8-14	4.0-7.5-11.0	---	5.1-6.2-7.3	0
	14-44	5.0-7.0-13.0	---	4.5-5.5-6.5	0
	44-84	3.0-7.0-11.0	---	5.1-5.8-7.3	0
Tracy-----	0-5	4.0-5.0-8.0	5.0-9.5-14.0	4.5-5.0-5.5	0
	5-47	4.0-7.0-9.0	4.0-8.5-13.0	4.5-4.8-5.0	0
	47-60	3.0-10.0-12.0	2.0-9.0-16.0	4.5-4.8-5.0	0
	60-86	1.0-3.5-6.0	---	5.6-5.8-6.0	0
UhwA:					
Urban land.					
Martinsville-----	0-13	8.0-12.0-16.0	---	5.1-6.2-7.3	0
	13-35	9.0-15.5-22.0	---	5.1-5.8-6.5	0
	35-53	7.0-12.0-17.0	---	5.1-5.8-7.3	0
	53-60	1.0-7.0-13.0	---	7.4-7.4-8.4	15-23-45
UhwB:					
Urban land.					
Martinsville-----	0-5	8.0-12.0-16.0	---	5.1-6.2-7.3	0
	5-35	9.0-15.5-22.0	---	5.1-5.8-6.5	0
	35-53	7.0-12.0-17.0	---	5.1-5.8-7.3	0
	53-60	1.0-7.0-13.0	---	7.4-7.4-8.4	15-23-45
UhwC:					
Urban land.					
Martinsville-----	0-5	8.0-12.0-16.0	---	5.1-6.2-7.3	0
	5-35	9.0-15.5-22.0	---	5.1-5.8-6.5	0
	35-53	7.0-12.0-17.0	---	5.1-5.8-7.3	0
	53-60	1.0-7.0-13.0	---	7.4-7.4-8.4	15-23-45

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
UkaA: Urban land.					
Maumee-----	0-23	8.0-9.0-10.0	---	5.6-6.7-7.8	0
	23-61	1.0-4.5-8.0	---	5.6-6.5-7.3	0
	61-80	1.0-2.0-3.0	---	6.1-7.3-8.4	0-20-40
UkeA: Urban land.					
Milford-----	0-18	14.0-21.0-28.0	---	5.6-6.5-7.3	0
	18-50	22.0-25.5-29.0	---	5.6-6.7-7.8	0-7-15
	50-60	4.0-11.0-18.0	---	6.6-7.5-8.4	0-15-30
UkxA: Urban land.					
Oshtemo-----	0-9	4.0-9.0-12.0	---	5.6-6.5-7.3	0
	9-14	5.0-9.0-15.0	---	5.1-6.2-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
UkxB: Urban land.					
Oshtemo-----	0-9	4.0-9.0-12.0	---	5.6-6.5-7.3	0
	9-14	5.0-9.0-15.0	---	5.1-6.2-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
UkxC: Urban land.					
Oshtemo-----	0-9	4.0-9.0-12.0	---	5.6-6.5-7.3	0
	9-14	5.0-9.0-15.0	---	5.1-6.2-7.3	0
	14-35	5.0-8.0-15.0	---	5.1-6.2-7.3	0
	35-60	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	60-80	1.0-3.0-5.0	---	7.4-7.9-8.4	20-30-40
UmfB: Urban land.					
Riddles-----	0-8	3.0-8.0-13.0	---	5.6-6.5-7.3	0
	8-13	7.0-13.5-20.0	---	4.5-5.9-7.3	0
	13-33	6.0-12.0-18.0	---	6.6-7.2-7.8	0-13-25
	33-63	4.0-9.0-14.0	---	7.4-7.9-8.4	15-25-35
	63-90	2.0-6.5-11.0	---	5.1-6.2-7.3	0
	90-100	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Metea-----	0-9	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	9-28	1.0-4.0-7.0	---	5.1-5.8-6.5	0
	28-32	6.0-10.0-15.0	---	5.6-6.1-6.5	0
	32-44	11.0-15.0-23.0	---	5.6-6.5-7.3	0
	44-80	5.0-9.5-14.0	---	5.6-7.0-8.4	0-20-40

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
UmfC: Urban land.					
Riddles-----	0-5	3.0-8.0-13.0	---	5.6-6.5-7.3	0
	5-13	7.0-13.5-20.0	---	4.5-5.9-7.3	0
	13-33	6.0-12.0-18.0	---	6.6-7.2-7.8	0-13-25
	33-63	4.0-9.0-14.0	---	7.4-7.9-8.4	15-25-35
	63-90	2.0-6.5-11.0	---	5.1-6.2-7.3	0
	90-100	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Metea-----	0-7	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	7-28	1.0-4.0-7.0	---	5.1-5.8-6.5	0
	28-32	6.0-10.0-15.0	---	5.6-6.1-6.5	0
	32-44	11.0-15.0-23.0	---	5.6-6.5-7.3	0
	44-80	5.0-9.5-14.0	---	5.6-7.0-8.4	0-20-40
UmfD: Urban land.					
Riddles-----	0-5	3.0-8.0-13.0	---	5.6-6.5-7.3	0
	5-13	7.0-13.5-20.0	---	4.5-5.9-7.3	0
	13-33	6.0-12.0-18.0	---	6.6-7.2-7.8	0-13-25
	33-63	4.0-9.0-14.0	---	7.4-7.9-8.4	15-25-35
	63-90	2.0-6.5-11.0	---	5.1-6.2-7.3	0
	90-100	5.0-9.5-14.0	---	7.4-7.9-8.4	15-28-40
Metea-----	0-7	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	7-28	1.0-4.0-7.0	---	5.1-5.8-6.5	0
	28-32	6.0-10.0-15.0	---	5.6-6.1-6.5	0
	32-44	11.0-15.0-23.0	---	5.6-6.5-7.3	0
	44-80	5.0-9.5-14.0	---	5.6-7.0-8.4	0-20-40
UmpA: Urban land.					
Schoolcraft-----	0-14	5.0-10.0-15.0	---	5.1-6.5-7.3	0
	14-29	3.0-20.0-25.0	---	4.5-5.5-7.3	0
	29-39	4.0-15.0-17.0	---	4.5-5.8-6.5	0
	39-77	1.0-3.5-6.0	---	4.5-5.9-7.3	0
	77-95	1.0-2.0-3.0	---	6.6-7.9-8.4	0-15-30
UmuA: Urban land.					
Southwest-----	0-10	10.0-20.0-30.0	---	6.1-6.7-7.3	0
	10-23	10.0-20.0-30.0	---	6.1-6.7-7.3	0
	23-34	20.0-28.0-36.0	---	6.1-6.7-7.3	0
	34-45	10.0-15.0-20.0	---	6.1-6.7-7.3	0
	45-75	10.0-21.5-33.0	---	6.1-6.7-7.8	0-7-15
	75-80	2.0-8.5-15.0	---	7.4-7.9-8.4	5-15-25
UmwA: Urban land.					
Tracy-----	0-9	4.0-5.0-8.0	5.0-9.5-14.0	4.5-5.0-5.5	0
	9-47	4.0-7.0-9.0	4.0-8.5-13.0	4.5-4.8-5.0	0
	47-60	3.0-10.0-12.0	2.0-9.0-16.0	4.5-4.8-5.0	0
	60-86	1.0-3.5-6.0	---	5.6-5.8-6.0	0

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
UmwB: Urban land.					
Tracy-----	0-9	4.0-5.0-8.0	5.0-9.5-14.0	4.5-5.0-5.5	0
	9-47	4.0-7.0-9.0	4.0-8.5-13.0	4.5-4.8-5.0	0
	47-60	3.0-10.0-12.0	2.0-9.0-16.0	4.5-4.8-5.0	0
	60-86	1.0-3.5-6.0	---	5.6-5.8-6.0	0
UmwC: Urban land.					
Tracy-----	0-5	4.0-5.0-8.0	5.0-9.5-14.0	4.5-5.0-5.5	0
	5-47	4.0-7.0-9.0	4.0-8.5-13.0	4.5-4.8-5.0	0
	47-60	3.0-10.0-12.0	2.0-9.0-16.0	4.5-4.8-5.0	0
	60-86	1.0-3.5-6.0	---	5.6-5.8-6.0	0
UmwD: Urban land.					
Tracy-----	0-9	4.0-5.0-8.0	5.0-9.5-14.0	4.5-5.0-5.5	0
	9-47	4.0-7.0-9.0	4.0-8.5-13.0	4.5-4.8-5.0	0
	47-60	3.0-10.0-12.0	2.0-9.0-16.0	4.5-4.8-5.0	0
	60-86	1.0-3.5-6.0	---	5.6-5.8-6.0	0
UmxA: Urban land.					
Troxel-----	0-50	14.0-20.0-26.0	---	5.6-6.1-6.5	0
	50-70	11.0-18.0-25.0	---	5.6-6.1-6.5	0
	70-91	5.0-9.0-13.0	---	5.6-6.7-7.8	0
UnoA: Urban land.					
Whitaker-----	0-17	5.0-11.0-17.0	---	5.6-6.5-7.3	0
	17-39	8.0-15.0-22.0	---	5.1-6.2-7.3	0
	39-48	3.0-7.0-11.0	---	5.1-5.8-6.5	0
	48-86	2.0-7.5-13.0	---	6.1-7.3-8.4	0-23-45
UnqB: Urban land.					
Williamstown-----	0-7	4.0-10.5-17.0	---	5.1-6.2-7.3	0
	7-34	9.0-16.0-23.0	---	5.1-6.2-7.3	0
	34-39	6.0-11.0-16.0	---	6.6-7.5-8.4	0-20-40
	39-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-27-40
Crosier-----	0-11	7.0-12.0-17.0	---	5.6-6.5-7.3	0
	11-30	8.0-14.0-20.0	---	5.1-6.2-7.3	0
	30-38	3.0-9.5-16.0	---	6.1-7.3-8.4	0-8-15
	38-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35
UntA: Urban land.					
Wunabuna, drained----	0-21	10.0-18.0-25.0	---	6.1-7.0-7.8	0-0-15
	21-32	10.0-30.0-40.0	---	6.1-7.0-7.8	0-0-15
	32-38	15.0-35.0-40.0	---	6.1-7.0-7.8	0-7-15
	38-80	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
Usl: Udorthents, rubbish.					

Table 18.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation- exchange capacity	Effective cation- exchange capacity	Soil reaction	Calcium carbonate equivalent
	In	meq/100 g	meq/100 g	pH	Pct
W: Water.					
WcnAI: Waterford-----	0-8	4.0-8.0-17.0	---	6.1-7.0-7.8	0
	8-41	4.0-8.0-16.0	---	6.1-7.0-7.8	0
	41-46	1.0-2.0-3.0	---	6.6-7.2-7.8	0-1-5
	46-50	1.0-5.0-9.0	---	6.1-6.7-7.3	0
	50-80	1.0-2.0-3.0	---	6.6-7.5-8.4	5-15-25
WoaA: Williamstown-----	0-7	4.0-10.5-17.0	---	5.1-6.2-7.3	0
	7-34	9.0-16.0-23.0	---	5.1-6.2-7.3	0
	34-39	6.0-11.0-16.0	---	6.6-7.5-8.4	0-20-40
	39-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-27-40
WoaB2: Williamstown-----	0-5	4.0-10.5-17.0	---	5.1-6.2-7.3	0
	5-34	9.0-16.0-23.0	---	5.1-6.2-7.3	0
	34-39	6.0-11.0-16.0	---	6.6-7.5-8.4	0-20-40
	39-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-27-40
WoaC2: Williamstown-----	0-5	4.0-10.5-17.0	---	5.1-6.2-7.3	0
	5-34	9.0-16.0-23.0	---	5.1-6.2-7.3	0
	34-39	6.0-11.0-16.0	---	6.6-7.5-8.4	0-20-40
	39-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-27-40
WobB: Williamstown-----	0-7	4.0-10.5-17.0	---	5.1-6.2-7.3	0
	7-34	9.0-16.0-23.0	---	5.1-6.2-7.3	0
	34-39	6.0-11.0-16.0	---	6.6-7.5-8.4	0-20-40
	39-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-27-40
Crosier-----	0-11	7.0-12.0-17.0	---	5.6-6.5-7.3	0
	11-30	8.0-14.0-20.0	---	5.1-6.2-7.3	0
	30-38	3.0-9.5-16.0	---	6.1-7.3-8.4	0-8-15
	38-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-25-35
WrxAN: Wunabuna, drained----	0-21	10.0-18.0-25.0	---	6.1-7.0-7.8	0-0-15
	21-32	10.0-30.0-40.0	---	6.1-7.0-7.8	0-0-15
	32-38	15.0-35.0-40.0	---	6.1-7.0-7.8	0-7-15
	38-80	125.0-185.0-230.0	---	5.1-6.5-7.3	0-0-10
WtbA: Whitaker-----	0-17	5.0-11.0-17.0	---	5.6-6.5-7.3	0
	17-39	8.0-15.0-22.0	---	5.1-6.2-7.3	0
	39-48	3.0-7.0-11.0	---	5.1-5.8-6.5	0
	48-86	2.0-7.5-13.0	---	6.1-7.3-8.4	0-23-45
WujB: Williamstown-----	0-7	4.0-10.5-17.0	---	5.1-6.2-7.3	0
	7-34	9.0-16.0-23.0	---	5.1-6.2-7.3	0
	34-39	6.0-11.0-16.0	---	6.6-7.5-8.4	0-20-40
	39-80	2.0-5.5-9.0	---	7.4-7.9-8.4	15-27-40
Moon-----	0-9	2.0-5.5-9.0	---	5.6-6.5-7.3	0
	9-23	1.0-4.0-7.0	---	4.5-5.9-7.3	0
	23-35	6.0-10.5-15.0	---	5.1-6.2-7.3	0
	35-45	11.0-17.0-23.0	---	5.6-6.5-7.3	0
	45-80	5.0-9.5-14.0	---	7.4-7.9-8.4	0-20-40

Table 19.--Water Features

(See text for definitions of terms used in this table. Estimates of the frequency of flooding from stream gauge data where available. Null values for water table indicate depth is >6.0 feet or greater than the bottom depth of a bedrock layer. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
AahAK:									
Abscota-----	A	Jan-Feb	2.5-3.5	> 6.0	---	---	None	---	None
		Mar-May	2.5-3.5	> 6.0	---	---	None	Brief	Occasional
		Jun	---	---	---	---	None	Brief	Occasional
		Jul-Sep	---	---	---	---	None	---	None
		Oct	2.5-4.5	> 6.0	---	---	None	---	None
		Nov	2.5-4.0	> 6.0	---	---	None	---	None
		Dec	2.5-3.5	> 6.0	---	---	None	---	None
AatAN:									
Ackerman, drained----	A	Jan-Mar	0.0-0.5	> 6.0	0.0-2.0	Long	Frequent	---	None
		Apr	0.0-1.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		May	1.0-2.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Jun	1.0-3.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Jul	1.3-4.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Aug-Sep	4.0-6.7	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Oct	1.3-4.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Nov	1.0-3.0	> 6.0	0.0-2.0	Brief	Occasional	---	None
		Dec	0.0-0.5	> 6.0	0.0-2.0	Long	Frequent	---	None
AbhAN:									
Adrian, drained-----	A	Jan-Mar	0.5-1.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Apr	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		May	0.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Jun	0.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Jul-Sep	---	---	0.0-1.0	Brief	Occasional	---	None
		Oct	0.5-2.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Nov	0.5-2.0	> 6.0	0.0-2.0	Brief	Occasional	---	None
		Dec	0.5-2.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
AbhAU:									
Adrian, undrained----	D	Jan-Jun	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jul-Aug	---	---	0.0-2.0	Brief	Frequent	---	None
		Sep	---	---	0.0-1.0	Brief	Occasional	---	None
		Oct-Nov	---	---	0.0-2.0	Brief	Frequent	---	None
		Dec	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
ApuAN:									
Antung, drained-----	A	Jan-Mar	0.0-0.5	> 6.0	0.0-2.0	Long	Frequent	---	None
		Apr	0.0-1.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		May	1.0-2.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Jun	1.0-3.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Jul	1.3-4.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Aug-Sep	4.0-6.7	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Oct	1.3-4.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Nov	1.0-3.0	> 6.0	0.0-2.0	Brief	Occasional	---	None
		Dec	0.0-0.5	> 6.0	0.0-2.0	Long	Frequent	---	None
AxvA:									
Auten-----	B	Jan-Mar	0.5-2.0	> 6.0	---	---	None	---	None
		Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-1.7	> 6.0	---	---	None	---	None
		Jun-Oct	---	---	---	---	None	---	None
		Nov-Dec	0.5-2.0	> 6.0	---	---	None	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
BaaA: Bainter-----	B	Jan-Dec	---	---	---	---	None	---	None
BaaB: Bainter-----	B	Jan-Dec	---	---	---	---	None	---	None
BaaC2: Bainter-----	B	Jan-Dec	---	---	---	---	None	---	None
BbmA: Baugo-----	C	Jan	0.5-3.0	4.2-5.0	---	---	None	---	None
		Feb	0.5-2.5	4.2-5.0	---	---	None	---	None
		Mar-Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-2.5	> 6.0	---	---	None	---	None
		Jun	1.0-3.0	4.2-5.0	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	4.2-5.0	---	---	None	---	None
		Dec	1.0-3.0	4.2-5.0	---	---	None	---	None
BmgA: Blount-----	C	Jan	0.5-3.0	2.5-4.2	---	---	None	---	None
		Feb	0.5-2.5	2.5-4.2	---	---	None	---	None
		Mar-Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-2.5	> 6.0	---	---	None	---	None
		Jun	1.0-3.0	2.5-4.2	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.5-4.2	---	---	None	---	None
		Dec	1.0-3.0	2.5-4.2	---	---	None	---	None
BshA: Brady-----	B	Jan-Mar	0.5-2.0	> 6.0	---	---	None	---	None
		Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-1.7	> 6.0	---	---	None	---	None
		Jun-Oct	---	---	---	---	None	---	None
		Nov-Dec	0.5-2.0	> 6.0	---	---	None	---	None
BsxA: Brems-----	A	Jan-May	2.0-3.0	> 6.0	---	---	None	---	None
		Jun-Sep	---	---	---	---	None	---	None
		Oct-Dec	2.0-3.0	> 6.0	---	---	None	---	None
Morocco-----	B	Jan-Mar	0.5-2.0	> 6.0	---	---	None	---	None
		Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-1.7	> 6.0	---	---	None	---	None
		Jun-Aug	---	---	---	---	None	---	None
		Sep-Dec	0.5-2.0	> 6.0	---	---	None	---	None
BteA: Brems-----	A	Jan-May	2.0-3.0	> 6.0	---	---	None	---	None
		Jun-Sep	---	---	---	---	None	---	None
		Oct-Dec	2.0-3.0	> 6.0	---	---	None	---	None
BuuA: Brookston-----	B	Jan-Mar	0.5-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Apr-May	0.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Jun-Oct	---	---	0.0-0.5	Brief	Rare	---	None
		Nov	0.5-2.0	> 6.0	0.0-0.5	Brief	Rare	---	None
		Dec	0.5-2.0	> 6.0	0.0-0.5	Brief	Frequent	---	None



Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Surface water depth	Ponding		Flooding	
			Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
CmbAI:									
Cohoctah-----	B	Jan-Apr	0.0-0.5	> 6.0	---	---	None	Brief	Frequent
		May	0.0-1.0	> 6.0	---	---	None	Brief	Frequent
		Jun	1.0-1.5	> 6.0	---	---	None	---	None
		Jul	1.5-3.3	> 6.0	---	---	None	---	None
		Aug-Sep	3.3-6.0	> 6.0	---	---	None	---	None
		Oct	1.5-5.0	> 6.0	---	---	None	---	None
		Nov	1.0-1.5	> 6.0	---	---	None	Brief	Frequent
		Dec	0.0-1.0	> 6.0	---	---	None	Brief	Frequent
CnbA:									
Coloma-----	A	Jan-Dec	---	---	---	---	None	---	None
CnbB:									
Coloma-----	A	Jan-Dec	---	---	---	---	None	---	None
CnbC:									
Coloma-----	A	Jan-Dec	---	---	---	---	None	---	None
CnbD:									
Coloma-----	A	Jan-Dec	---	---	---	---	None	---	None
CrrA:									
Coupee-----	B	Jan-Dec	---	---	---	---	None	---	None
CvdA:									
Crosier-----	C	Jan	0.5-3.0	2.0-3.3	---	---	None	---	None
		Feb	0.5-2.5	2.0-3.3	---	---	None	---	None
		Mar-Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-2.5	> 6.0	---	---	None	---	None
		Jun	1.0-3.0	2.0-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.0-3.3	---	---	None	---	None
		Dec	1.0-3.0	2.0-3.3	---	---	None	---	None
CvdB:									
Crosier-----	C	Jan	0.5-3.0	2.0-3.3	---	---	None	---	None
		Feb	0.5-2.5	2.0-3.3	---	---	None	---	None
		Mar-Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-2.5	> 6.0	---	---	None	---	None
		Jun	1.0-3.0	2.0-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.0-3.3	---	---	None	---	None
		Dec	1.0-3.0	2.0-3.3	---	---	None	---	None
CwkA:									
Crumstown-----	B	Jan-May	3.5-6.7	> 6.0	---	---	None	---	None
		Jun-Sep	---	---	---	---	None	---	None
		Oct-Dec	3.5-6.7	> 6.0	---	---	None	---	None
CwkB:									
Crumstown-----	B	Jan-May	3.5-6.7	> 6.0	---	---	None	---	None
		Jun-Sep	---	---	---	---	None	---	None
		Oct-Dec	3.5-6.7	> 6.0	---	---	None	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
DcrA:									
Del Rey-----	C	Jan	0.5-3.0	2.0-4.0	---	---	None	---	None
		Feb	0.5-2.5	2.0-4.0	---	---	None	---	None
		Mar-Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-2.5	> 6.0	---	---	None	---	None
		Jun	1.0-3.0	2.0-4.0	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.0-4.0	---	---	None	---	None
		Dec	1.0-3.0	2.0-4.0	---	---	None	---	None
EchAN:									
Edwards, drained-----	B	Jan-Mar	0.5-1.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Apr	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		May	0.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Jun	0.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Jul-Sep	---	---	0.0-1.0	Brief	Occasional	---	None
		Oct	0.5-2.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Nov	0.5-2.0	> 6.0	0.0-2.0	Brief	Occasional	---	None
		Dec	0.5-2.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
EchAU:									
Edwards, undrained----	D	Jan-Jun	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jul-Aug	---	---	0.0-2.0	Brief	Frequent	---	None
		Sep	---	---	0.0-1.0	Brief	Occasional	---	None
		Oct-Nov	---	---	0.0-2.0	Brief	Frequent	---	None
		Dec	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
EcrAN:									
Edselton, drained-----	B	Jan-Apr	0.0-0.5	> 6.0	0.0-2.0	Long	Frequent	---	None
		May	0.0-1.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Jun	0.5-1.3	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Jul	1.3-4.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Aug-Sep	4.0-6.7	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Oct	1.3-4.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Nov	0.5-1.3	> 6.0	0.0-2.0	Brief	Occasional	---	None
		Dec	0.0-0.5	> 6.0	0.0-2.0	Brief	Frequent	---	None
EcrAU:									
Edselton, undrained---	D	Jan-May	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jun	0.0-0.5	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jul-Aug	0.0-0.5	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Sep	0.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Oct-Nov	0.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Dec	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
EmeA:									
Elston-----	B	Jan-Dec	---	---	---	---	None	---	None
GczA:									
Gilford-----	B	Jan-Apr	0.0-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		May	0.0-2.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Jun	1.0-3.0	> 6.0	---	---	None	---	None
		Jul	3.0-6.7	> 6.0	---	---	None	---	None
		Aug-Sep	---	---	---	---	None	---	None
		Oct	3.0-6.7	> 6.0	---	---	None	---	None
		Nov	1.0-3.0	> 6.0	---	---	None	---	None
		Dec	0.0-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
GdnA:									
Gilford-----	B	Jan-Apr	0.0-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		May	0.0-2.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Jun	1.0-3.0	> 6.0	---	---	None	---	None
		Jul	3.0-6.7	> 6.0	---	---	None	---	None
		Aug-Sep	---	---	---	---	None	---	None
		Oct	3.0-6.7	> 6.0	---	---	None	---	None
		Nov	1.0-3.0	> 6.0	---	---	None	---	None
		Dec	0.0-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
HfbAN:									
Henrietta, drained---	B	Jan-Mar	0.5-1.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Apr-May	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jun	0.0	> 6.0	---	---	None	---	None
		Jul-Sep	---	---	---	---	None	---	None
		Oct	0.5-1.0	> 6.0	---	---	None	---	None
		Nov-Dec	0.5-1.0	> 6.0	0.0-2.0	Long	Frequent	---	None
HfbAU:									
Henrietta, undrained--	D	Jan-Jun	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jul-Aug	---	---	0.0-2.0	Brief	Frequent	---	None
		Sep	---	---	0.0-1.0	Brief	Occasional	---	None
		Oct-Nov	---	---	0.0-2.0	Brief	Frequent	---	None
		Dec	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
HkkA:									
Hillsdale-----	B	Jan-Dec	---	---	---	---	None	---	None
HkkB:									
Hillsdale-----	B	Jan-Dec	---	---	---	---	None	---	None
HknC2:									
Hillsdale-----	B	Jan-Dec	---	---	---	---	None	---	None
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
HknD2:									
Hillsdale-----	B	Jan-Dec	---	---	---	---	None	---	None
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
HkpC2:									
Hillsdale-----	B	Jan-Dec	---	---	---	---	None	---	None
Tracy-----	B	Jan-Dec	---	---	---	---	None	---	None
HkpD2:									
Hillsdale-----	B	Jan-Dec	---	---	---	---	None	---	None
Tracy-----	B	Jan-Dec	---	---	---	---	None	---	None
HtbAN:									
Houghton, drained-----	A	Jan-Mar	0.5-1.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Apr	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		May	0.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Jun	0.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Jul-Sep	---	---	0.0-1.0	Brief	Occasional	---	None
		Oct	0.5-2.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Nov	0.5-2.0	> 6.0	0.0-2.0	Brief	Occasional	---	None
		Dec	0.5-2.0	> 6.0	0.0-2.0	Long	Frequent	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
HtbAU: Houghton, undrained---	D	Jan-Jun	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jul	0.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Aug	0.0-0.5	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Sep	---	---	0.0-1.0	Brief	Occasional	---	None
		Oct-Nov	---	---	0.0-2.0	Brief	Frequent	---	None
		Dec	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
JaaAK: Jamestown-----	C	Jan	0.5-3.0	3.5-5.8	---	---	None	Brief	Occasional
		Feb	0.5-2.5	3.5-5.9	---	---	None	Brief	Occasional
		Mar	0.5-2.0	> 6.0	---	---	None	Brief	Occasional
		Apr-May	0.5-1.5	> 6.0	---	---	None	Brief	Occasional
		Jun	0.5-1.5	3.5-5.9	---	---	None	Brief	Occasional
		Jul-Oct	---	---	---	---	None	Brief	Occasional
		Nov-Dec	1.0-3.0	3.5-5.9	---	---	None	Brief	Occasional
MfaA: Martinsville-----	B	Jan-Dec	---	---	---	---	None	---	None
MfaB2: Martinsville-----	B	Jan-Dec	---	---	---	---	None	---	None
MfaC2: Martinsville-----	B	Jan-Dec	---	---	---	---	None	---	None
MfrAN: Madaus, drained-----	B	Jan-Mar	0.5-1.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Apr	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		May	0.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Jun	0.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Jul-Sep	---	---	0.0-1.0	Brief	Occasional	---	None
		Oct	0.5-2.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Nov	0.5-2.0	> 6.0	0.0-2.0	Brief	Occasional	---	None
		Dec	0.5-2.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
MfrAU: Madaus, undrained----	D	Jan-May	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jun	0.0-0.5	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jul-Aug	0.0-0.5	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Sep	0.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Oct-Nov	0.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Dec	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
MgcA: Maumee-----	A	Jan-Mar	0.5-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Apr-May	---	---	0.0-0.5	Brief	Frequent	---	None
		Jun-Sep	---	---	---	---	None	---	None
		Oct	0.5-1.0	> 6.0	---	---	None	---	None
		Nov-Dec	0.5-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
MgdAN: Martisco, drained----	B	Jan-Apr	0.0-0.5	> 6.0	0.0-2.0	Long	Frequent	---	None
		May	0.0-1.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Jun	0.5-1.3	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Jul	1.3-4.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Aug-Sep	4.0-6.7	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Oct	1.3-4.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Nov	0.5-1.3	> 6.0	0.0-2.0	Brief	Occasional	---	None
		Dec	0.0-0.5	> 6.0	0.0-2.0	Brief	Frequent	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Surface water depth	Ponding		Flooding	
			Upper limit	Lower limit		Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
MhaA:									
Maumee-----	A	Jan-May	0.0-0.5	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Jun-Jul	0.0-1.0	> 6.0	---	---	None	---	None
		Aug	1.0-2.0	> 6.0	---	---	None	---	None
		Sep-Oct	0.0-1.0	> 6.0	---	---	None	---	None
		Nov	0.0-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Dec	0.0-0.5	> 6.0	0.0-0.5	Brief	Frequent	---	None
MhbA:									
Maumee-----	A	Jan-May	0.0-0.5	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Jun-Jul	0.0-1.0	> 6.0	0.0-0.5	Brief	Rare	---	None
		Aug	1.0-2.0	> 6.0	0.0-0.5	Brief	Rare	---	None
		Sep-Oct	0.0-1.0	> 6.0	0.0-0.5	Brief	Rare	---	None
		Nov	0.0-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Dec	0.0-0.5	> 6.0	0.0-0.5	Brief	Frequent	---	None
MmbC2:									
Miami-----	B	Jan-Jun	2.0-3.5	2.5-3.5	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.5	2.5-3.5	---	---	None	---	None
		Dec	2.5-3.5	2.5-3.5	---	---	None	---	None
MmdC3:									
Miami-----	B	Jan-Jun	2.0-3.5	2.5-3.5	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.5	2.5-3.5	---	---	None	---	None
		Dec	2.5-3.5	2.5-3.5	---	---	None	---	None
MmdD3:									
Miami-----	B	Jan-Jun	2.0-3.5	2.5-3.5	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.5	2.5-3.5	---	---	None	---	None
		Dec	2.5-3.5	2.5-3.5	---	---	None	---	None
MouA:									
Milford-----	B	Jan-May	0.0	> 6.0	0.0-1.0	Brief	Frequent	---	None
		Jun-Jul	0.0	> 6.0	---	---	None	---	None
		Aug-Oct	---	---	---	---	None	---	None
		Nov-Dec	0.0	> 6.0	0.0-1.0	Brief	Frequent	---	None
MsaA:									
Mishawaka-----	A	Jan-Dec	---	---	---	---	None	---	None
MtsB2:									
Morley-----	C	Jan	1.0-3.0	1.7-3.3	---	---	None	---	None
		Feb-May	1.0-2.5	1.7-3.3	---	---	None	---	None
		Jun	1.0-3.0	1.7-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	1.7-3.3	---	---	None	---	None
		Dec	1.5-3.0	1.7-3.3	---	---	None	---	None
MtsC2:									
Morley-----	C	Jan	1.0-3.0	1.7-3.3	---	---	None	---	None
		Feb-May	1.0-2.5	1.7-3.3	---	---	None	---	None
		Jun	1.0-3.0	1.7-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	1.7-3.3	---	---	None	---	None
		Dec	1.5-3.0	1.7-3.3	---	---	None	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
MubD3: Morley-----	C	Jan	1.0-3.0	1.7-3.3	---	---	None	---	None
		Feb-May	1.0-2.5	1.7-3.3	---	---	None	---	None
		Jun	1.0-3.0	1.7-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	1.7-3.3	---	---	None	---	None
		Dec	1.5-3.0	1.7-3.3	---	---	None	---	None
MvhAN: Moston, drained-----	A	Jan-Apr	0.0-0.5	> 6.0	0.0-2.0	Long	Frequent	---	None
		May	0.0-1.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Jun	0.5-1.3	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Jul	1.3-4.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Aug-Sep	4.0-6.7	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Oct	1.3-4.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Nov	0.5-1.3	> 6.0	0.0-2.0	Brief	Occasional	---	None
		Dec	0.0-0.5	> 6.0	0.0-2.0	Brief	Frequent	---	None
MvhAU: Moston, undrained----	D	Jan-May	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jun	0.0-0.5	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jul-Aug	0.0-0.5	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Sep	0.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Oct-Nov	0.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Dec	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
MvkA: Morocco-----	B	Jan-Mar	0.5-2.0	> 6.0	---	---	None	---	None
		Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-1.7	> 6.0	---	---	None	---	None
		Jun-Aug	---	---	---	---	None	---	None
		Sep-Dec	0.5-2.0	> 6.0	---	---	None	---	None
MwzAN: Muskego, drained-----	A	Jan-Mar	0.5-1.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Apr	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		May	0.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Jun	0.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Jul-Sep	---	---	0.0-1.0	Brief	Occasional	---	None
		Oct	0.5-2.0	> 6.0	0.0-1.0	Brief	Occasional	---	None
		Nov	0.5-2.0	> 6.0	0.0-2.0	Brief	Occasional	---	None
		Dec	0.5-2.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
MwzAU: Muskego, undrained----	D	Jan-Jun	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jul-Aug	---	---	0.0-2.0	Brief	Frequent	---	None
		Sep	---	---	0.0-1.0	Brief	Occasional	---	None
		Oct-Nov	---	---	0.0-2.0	Brief	Frequent	---	None
		Dec	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
OkrA: Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
OkrB: Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
OkrC2: Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
OkrD: Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
OlcA: Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
OlcB: Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
OlcC2: Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
OlcD: Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
OmgA: Osolo-----	A	Jan-May	3.5-6.7	> 6.0	---	---	None	---	None
		Jun-Sep	---	---	---	---	None	---	None
		Oct-Dec	3.5-6.7	> 6.0	---	---	None	---	None
PaaAN: Palms, drained-----	A	Jan-Mar	0.5-1.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Apr-May	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jun	0.0	> 6.0	---	---	None	---	None
		Jul-Sep	---	---	---	---	None	---	None
		Oct	0.5-1.0	> 6.0	---	---	None	---	None
		Nov-Dec	0.5-1.0	> 6.0	0.0-2.0	Long	Frequent	---	None
PaaAU: Palms, undrained-----	D	Jan-Jun	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
		Jul-Aug	---	---	0.0-2.0	Brief	Frequent	---	None
		Sep	---	---	0.0-1.0	Brief	Occasional	---	None
		Oct-Nov	---	---	0.0-2.0	Brief	Frequent	---	None
		Dec	0.0	> 6.0	0.0-2.0	Long	Frequent	---	None
Pmg: Pits, gravel.									
PxlA: Psammaquents-----	---	Jan-Mar	0.5-2.0	> 6.0	---	---	None	---	None
		Apr-May	0.5-1.5	> 6.0	---	---	None	---	None
		Jun-Aug	---	---	---	---	None	---	None
		Sep-Dec	0.5-2.0	> 6.0	---	---	None	---	None
Pxo: Psammments.									
QuiA: Quinn-----	B	Jan-Mar	0.0-1.0	2.5-3.5	---	---	None	---	None
		Apr-May	0.0-3.0	2.5-3.5	---	---	None	---	None
		Jun	1.0-3.0	2.5-3.5	---	---	None	---	None
		Jul-Dec	---	---	---	---	None	---	None
QujA: Quinn-----	B	Jan-Mar	0.0-1.0	2.5-3.5	---	---	None	---	None
		Apr-May	0.0-3.0	2.5-3.5	---	---	None	---	None
		Jun	1.0-3.0	2.5-3.5	---	---	None	---	None
		Jul-Dec	---	---	---	---	None	---	None
RenA: Rensselaer-----	B	Jan-Mar	0.5-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Apr-May	0.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Jun-Oct	---	---	0.0-0.5	Brief	Rare	---	None
		Nov	0.5-2.0	> 6.0	0.0-0.5	Brief	Rare	---	None
		Dec	0.5-2.0	> 6.0	0.0-0.5	Brief	Frequent	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
ReyA:									
Rensselaer-----	B	Jan-Mar	0.5-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Apr-May	0.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Jun-Oct	---	---	0.0-0.5	Brief	Rare	---	None
		Nov	0.5-2.0	> 6.0	0.0-0.5	Brief	Rare	---	None
		Dec	0.5-2.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
RopA:									
Riddles-----	B	Jan-Dec	---	---	---	---	None	---	None
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
RopB:									
Riddles-----	B	Jan-Dec	---	---	---	---	None	---	None
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
RopC2:									
Riddles-----	B	Jan-Dec	---	---	---	---	None	---	None
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
RopD2:									
Riddles-----	B	Jan-Dec	---	---	---	---	None	---	None
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
RoqB:									
Riddles-----	B	Jan-Dec	---	---	---	---	None	---	None
Meta-----	B	Jan-Dec	---	---	---	---	None	---	None
RoqC2:									
Riddles-----	B	Jan-Dec	---	---	---	---	None	---	None
Meta-----	B	Jan-Dec	---	---	---	---	None	---	None
RoqD2:									
Riddles-----	B	Jan-Dec	---	---	---	---	None	---	None
Meta-----	B	Jan-Dec	---	---	---	---	None	---	None
SdzA:									
Selfridge-----	B	Jan	1.0-3.0	1.7-3.3	---	---	None	---	None
		Feb	1.0-2.5	1.7-3.3	---	---	None	---	None
		Mar-Apr	1.0-2.0	> 6.0	---	---	None	---	None
		May	2.0-2.0	> 6.0	---	---	None	---	None
		Jun	1.0-3.0	1.7-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	1.7-3.3	---	---	None	---	None
		Dec	1.0-3.0	1.7-3.3	---	---	None	---	None
Crosier-----	C	Jan	0.5-3.0	2.0-3.3	---	---	None	---	None
		Feb	0.5-2.5	2.0-3.3	---	---	None	---	None
		Mar-Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-2.5	> 6.0	---	---	None	---	None
		Jun	1.0-3.0	2.0-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.0-3.3	---	---	None	---	None
		Dec	1.0-3.0	2.0-3.3	---	---	None	---	None



Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
SdzaB:									
Selfridge-----	B	Jan	1.0-3.0	1.7-3.3	---	---	None	---	None
		Feb	1.0-2.5	1.7-3.3	---	---	None	---	None
		Mar-Apr	1.0-2.0	> 6.0	---	---	None	---	None
		May	2.0-2.0	> 6.0	---	---	None	---	None
		Jun	1.0-3.0	1.7-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	1.7-3.3	---	---	None	---	None
		Dec	1.0-3.0	1.7-3.3	---	---	None	---	None
Brems-----	A	Jan-May	2.0-3.0	> 6.0	---	---	None	---	None
		Jun-Sep	---	---	---	---	None	---	None
		Oct-Dec	2.0-3.0	> 6.0	---	---	None	---	None
SesA:									
Schoolcraft-----	B	Jan-Dec	---	---	---	---	None	---	None
Sn1A:									
Southwest-----	C	Jan-Mar	0.5-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Apr-May	0.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Jun-Oct	---	---	---	---	None	---	None
		Nov	0.5-2.0	> 6.0	---	---	None	---	None
		Dec	0.5-2.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
TmpA:									
Tracy-----	B	Jan-Dec	---	---	---	---	None	---	None
TmpB:									
Tracy-----	B	Jan-Dec	---	---	---	---	None	---	None
TmpC2:									
Tracy-----	B	Jan-Dec	---	---	---	---	None	---	None
TmpD:									
Tracy-----	B	Jan-Dec	---	---	---	---	None	---	None
TnwA:									
Troxel-----	B	Jan-Dec	---	---	---	---	None	---	None
TxuA:									
Tyner-----	A	Jan-Dec	---	---	---	---	None	---	None
TxuB:									
Tyner-----	A	Jan-Dec	---	---	---	---	None	---	None
TxuC:									
Tyner-----	A	Jan-Dec	---	---	---	---	None	---	None
TxuD:									
Tyner-----	A	Jan-Dec	---	---	---	---	None	---	None
TxuF:									
Tyner-----	A	Jan-Dec	---	---	---	---	None	---	None
Uam:									
Udorthents, loamy.									
UdeA:									
Urban land.									
Bainter-----	B	Jan-Dec	---	---	---	---	None	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
UdeB: Urban land.									
Bainter-----	B	Jan-Dec	---	---	---	---	None	---	None
UdeC: Urban land.									
Bainter-----	B	Jan-Dec	---	---	---	---	None	---	None
UdkA: Urban land.									
Brady-----	B	Jan-Mar	0.5-2.0	> 6.0	---	---	None	---	None
		Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-1.7	> 6.0	---	---	None	---	None
		Jun-Oct	---	---	---	---	None	---	None
		Nov-Dec	0.5-2.0	> 6.0	---	---	None	---	None
UdzA: Urban land.									
Auten-----	B	Jan-Mar	0.5-2.0	> 6.0	---	---	None	---	None
		Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-1.7	> 6.0	---	---	None	---	None
		Jun-Oct	---	---	---	---	None	---	None
		Nov-Dec	0.5-2.0	> 6.0	---	---	None	---	None
UeaA: Urban land.									
Crosier-----	C	Jan	0.5-3.0	2.0-3.3	---	---	None	---	None
		Feb	0.5-2.5	2.0-3.3	---	---	None	---	None
		Mar-Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-2.5	> 6.0	---	---	None	---	None
		Jun	1.0-3.0	2.0-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.0-3.3	---	---	None	---	None
		Dec	1.0-3.0	2.0-3.3	---	---	None	---	None
UeqA: Urban land.									
Gilford-----	B	Jan-Apr	0.0-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		May	0.0-2.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Jun	1.0-3.0	> 6.0	---	---	None	---	None
		Jul	3.0-6.7	> 6.0	---	---	None	---	None
		Aug-Sep	---	---	---	---	None	---	None
		Oct	3.0-6.7	> 6.0	---	---	None	---	None
		Nov	1.0-3.0	> 6.0	---	---	None	---	None
		Dec	0.0-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
UewA: Urban land.									
Brems-----	A	Jan-May	2.0-3.0	> 6.0	---	---	None	---	None
		Jun-Sep	---	---	---	---	None	---	None
		Oct-Dec	2.0-3.0	> 6.0	---	---	None	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
UewA:									
Morocco-----	B	Jan-Mar	0.5-2.0	> 6.0	---	---	None	---	None
		Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-1.7	> 6.0	---	---	None	---	None
		Jun-Aug	---	---	---	---	None	---	None
		Sep-Dec	0.5-2.0	> 6.0	---	---	None	---	None
UfbA:									
Urban land.									
Brookston-----	B	Jan-Mar	0.5-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Apr-May	0.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Jun-Oct	---	---	0.0-0.5	Brief	Rare	---	None
		Nov	0.5-2.0	> 6.0	0.0-0.5	Brief	Rare	---	None
		Dec	0.5-2.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
UfhA:									
Urban land.									
Coloma-----	A	Jan-Dec	---	---	---	---	None	---	None
UfhB:									
Urban land.									
Coloma-----	A	Jan-Dec	---	---	---	---	None	---	None
UfhC:									
Urban land.									
Coloma-----	A	Jan-Dec	---	---	---	---	None	---	None
UfmA:									
Urban land.									
Coupee-----	B	Jan-Dec	---	---	---	---	None	---	None
UfrA:									
Urban land.									
Del Rey-----	C	Jan	0.5-3.0	2.0-4.0	---	---	None	---	None
		Feb	0.5-2.5	2.0-4.0	---	---	None	---	None
		Mar-Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-2.5	> 6.0	---	---	None	---	None
		Jun	1.0-3.0	2.0-4.0	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.0-4.0	---	---	None	---	None
		Dec	1.0-3.0	2.0-4.0	---	---	None	---	None
UftA:									
Urban land.									
Elston-----	B	Jan-Dec	---	---	---	---	None	---	None
UfzA:									
Urban land.									
Mishawaka-----	A	Jan-Dec	---	---	---	---	None	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
UgaA: Urban land.									
Morocco-----	B	Jan-Mar	0.5-2.0	> 6.0	---	---	None	---	None
		Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-1.7	> 6.0	---	---	None	---	None
		Jun-Aug	---	---	---	---	None	---	None
		Sep-Dec	0.5-2.0	> 6.0	---	---	None	---	None
UglA: Urban land.									
Osolo-----	A	Jan-May	3.5-6.7	> 6.0	---	---	None	---	None
		Jun-Sep	---	---	---	---	None	---	None
		Oct-Dec	3.5-6.7	> 6.0	---	---	None	---	None
UgrA: Urban land.									
Rensselaer-----	B	Jan-Mar	0.5-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Apr-May	0.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Jun-Oct	---	---	0.0-0.5	Brief	Rare	---	None
		Nov	0.5-2.0	> 6.0	0.0-0.5	Brief	Rare	---	None
		Dec	0.5-2.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
UgsA: Urban land.									
Riddles-----	B	Jan-Dec	---	---	---	---	None	---	None
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
UgsB: Urban land.									
Riddles-----	B	Jan-Dec	---	---	---	---	None	---	None
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
UgvA: Urban land.									
Tyner-----	A	Jan-Dec	---	---	---	---	None	---	None
UgvB: Urban land.									
Tyner-----	A	Jan-Dec	---	---	---	---	None	---	None
UgvC: Urban land.									
Tyner-----	A	Jan-Dec	---	---	---	---	None	---	None
UgvD: Urban land.									
Tyner-----	A	Jan-Dec	---	---	---	---	None	---	None
UhmA: Urban land.									
Hillsdale-----	B	Jan-Dec	---	---	---	---	None	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
UhmB: Urban land.									
Hillsdale-----	B	Jan-Dec	---	---	---	---	None	---	None
UhoC: Urban land.									
Hillsdale-----	B	Jan-Dec	---	---	---	---	None	---	None
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
UhoD: Urban land.									
Hillsdale-----	B	Jan-Dec	---	---	---	---	None	---	None
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
UhpC: Urban land.									
Hillsdale-----	B	Jan-Dec	---	---	---	---	None	---	None
Tracy-----	B	Jan-Dec	---	---	---	---	None	---	None
UhpD: Urban land.									
Hillsdale-----	B	Jan-Dec	---	---	---	---	None	---	None
Tracy-----	B	Jan-Dec	---	---	---	---	None	---	None
UhwA: Urban land.									
Martinsville-----	B	Jan-Dec	---	---	---	---	None	---	None
UhwB: Urban land.									
Martinsville-----	B	Jan-Dec	---	---	---	---	None	---	None
UhwC: Urban land.									-
Martinsville-----	B	Jan-Dec	---	---	---	---	None	---	None
UkaA: Urban land.									-
Maumee-----	A	Jan-Mar	0.5-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Apr-May	---	---	0.0-0.5	Brief	Frequent	---	None
		Jun-Sep	---	---	---	---	None	---	None
		Oct	0.5-1.0	> 6.0	---	---	None	---	None
		Nov-Dec	0.5-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None

Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
UkeA: Urban land.									-
Milford-----	B	Jan-May	0.0	> 6.0	0.0-1.0	Brief	Frequent	---	None
		Jun-Jul	0.0	> 6.0	---	---	None	---	None
		Aug-Oct	---	---	---	---	None	---	None
		Nov-Dec	0.0	> 6.0	0.0-1.0	Brief	Frequent	---	None
UkxA: Urban land.									
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
UkxB: Urban land.									
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
UkxC: Urban land.									
Oshtemo-----	B	Jan-Dec	---	---	---	---	None	---	None
UmfB: Urban land.									
Riddles-----	B	Jan-Dec	---	---	---	---	None	---	None
Metea-----	B	Jan-Dec	---	---	---	---	None	---	None
UmfC: Urban land.									
Riddles-----	B	Jan-Dec	---	---	---	---	None	---	None
Metea-----	B	Jan-Dec	---	---	---	---	None	---	None
UmfD: Urban land.									
Riddles-----	B	Jan-Dec	---	---	---	---	None	---	None
Metea-----	B	Jan-Dec	---	---	---	---	None	---	None
UmpA: Urban land.									
Schoolcraft-----	B	Jan-Dec	---	---	---	---	None	---	None
UmuA: Urban land.									
Southwest-----	C	Jan-Mar	0.5-1.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Apr-May	0.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
		Jun-Oct	---	---	---	---	None	---	None
		Nov	0.5-2.0	> 6.0	---	---	None	---	None
		Dec	0.5-2.0	> 6.0	0.0-0.5	Brief	Frequent	---	None
UmwA: Urban land.									
Tracy-----	B	Jan-Dec	---	---	---	---	None	---	None



Table 19.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft.	Ft.	Ft.				
WcnAI:									
Waterford-----	B	Jan-Mar	0.5-2.0	> 6.0	---	---	None	Long	Frequent
		Apr-May	0.5-1.5	> 6.0	---	---	None	Long	Frequent
		Jun	---	---	---	---	None	Long	Frequent
		Jul-Oct	---	---	---	---	None	---	None
		Nov-Dec	0.5-2.0	> 6.0	---	---	None	Long	Frequent
WoaA:									
Williamstown-----	C	Jan-Jun	1.5-2.5	1.7-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.0-3.5	---	---	None	---	None
		Dec	1.5-2.5	1.7-3.3	---	---	None	---	None
WoaB2:									
Williamstown-----	C	Jan-Jun	1.5-2.5	1.7-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.0-3.5	---	---	None	---	None
		Dec	1.5-2.5	1.7-3.3	---	---	None	---	None
WoaC2:									
Williamstown-----	C	Jan-Jun	1.5-2.5	1.7-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.0-3.5	---	---	None	---	None
		Dec	1.5-2.5	1.7-3.3	---	---	None	---	None
WobB:									
Williamstown-----	C	Jan-Jun	1.5-2.5	1.7-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.0-3.5	---	---	None	---	None
		Dec	1.5-2.5	1.7-3.3	---	---	None	---	None
Crosier-----									
	C	Jan	0.5-3.0	2.0-3.3	---	---	None	---	None
		Feb	0.5-2.5	2.0-3.3	---	---	None	---	None
		Mar-Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-2.5	> 6.0	---	---	None	---	None
		Jun	1.0-3.0	2.0-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.0-3.3	---	---	None	---	None
		Dec	1.0-3.0	2.0-3.3	---	---	None	---	None
WrxAN:									
Wunabuna, drained----	B	Jan-May	0.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
		Jun-Oct	---	---	---	---	None	---	None
		Nov-Dec	0.0	> 6.0	0.0-2.0	Brief	Frequent	---	None
WtbA:									
Whitaker-----	C	Jan-Mar	0.5-2.0	> 6.0	---	---	None	---	None
		Apr	0.5-1.5	> 6.0	---	---	None	---	None
		May	0.5-1.7	> 6.0	---	---	None	---	None
		Jun-Oct	---	---	---	---	None	---	None
		Nov-Dec	0.5-2.0	> 6.0	---	---	None	---	None
WujB:									
Williamstown-----	C	Jan-Jun	1.5-2.5	1.7-3.3	---	---	None	---	None
		Jul-Oct	---	---	---	---	None	---	None
		Nov	2.0-3.0	2.0-3.5	---	---	None	---	None
		Dec	1.5-2.5	1.7-3.3	---	---	None	---	None
Moon-----									
	B	Jan-Apr	1.5-3.0	1.7-3.3	---	---	None	---	None
		May	2.0-3.5	1.7-3.3	---	---	None	---	None
		Jun-Sep	---	---	---	---	None	---	None
		Oct	2.0-3.5	1.7-3.3	---	---	None	---	None
		Nov-Dec	1.5-3.0	1.7-3.3	---	---	None	---	None



Table 20.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness	Initial	Total		Uncoated steel	Concrete
		In		In	In			
AahAK: Abscota-----	---	---	---	---	---	Low	Low	Low
AatAN: Ackerman, drained	---	---	---	2-4	4-8	High	High	Low
AbhAN: Adrian, drained--	---	---	---	6-17	29-34	High	High	Moderate
AbhAU: Adrian, undrained	---	---	---	6-17	29-34	High	High	Moderate
ApuAN: Antung, drained--	---	---	---	3-6	6-12	High	High	Moderate
AxvA: Auten-----	Strongly contrasting textural stratification	20-35	---	---	---	High	High	High
BaaA: Bainter-----	---	---	---	---	---	Moderate	Low	Moderate
BaaB: Bainter-----	---	---	---	---	---	Moderate	Low	Moderate
BaaC2: Bainter-----	---	---	---	---	---	Moderate	Low	Moderate
BbmA: Baugo-----	Dense material	50-60	---	---	---	High	High	Moderate
BmgA: Blount-----	Dense material	30-50	---	---	---	High	High	Moderate
BshA: Brady-----	Strongly contrasting textural stratification	40-70	---	---	---	High	Low	Moderate
BsxA: Brems-----	---	---	---	---	---	Low	Low	High
Morocco-----	---	---	---	---	---	Moderate	Low	High
BteA: Brems-----	---	---	---	---	---	Low	Low	High
BuuA: Brookston-----	---	---	---	---	---	High	High	Low
CmbAI: Cohoctah-----	---	---	---	---	---	High	High	Low

Table 20.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness	Initial	Total		Uncoated steel	Concrete
		In		In	In			
CnbA: Coloma-----	---	---	---	---	---	Low	Low	Moderate
CnbB: Coloma-----	---	---	---	---	---	Low	Low	Moderate
CnbC: Coloma-----	---	---	---	---	---	Low	Low	Moderate
CnbD: Coloma-----	---	---	---	---	---	Low	Low	Moderate
CrrA: Coupee-----	Strongly contrasting textural stratification	30-40	---	---	---	Moderate	Moderate	High
CvdA: Crosier-----	Dense material	24-40	Weakly cemented	---	---	High	High	Low
CvdB: Crosier-----	Dense material	24-40	Weakly cemented	---	---	High	High	Low
CwkA: Crumstown-----	---	---	---	---	---	Moderate	Low	High
CwkB: Crumstown-----	---	---	---	---	---	Moderate	Low	High
DcrA: Del Rey-----	---	---	---	---	---	High	High	Moderate
EchAN: Edwards, drained-	---	---	---	4-12	19-24	High	High	Low
EchAU: Edwards, undrained-----	---	---	---	4-12	19-24	High	High	Low
EcrAN: Edselton, drained	---	---	---	4-10	15-21	High	High	Low
EcrAU: Edselton, undrained-----	---	---	---	4-10	15-21	High	High	Low
EmeA: Elston-----	---	---	---	---	---	Moderate	Low	Moderate
GczA: Gilford-----	---	---	---	---	---	High	High	Moderate
GdnA: Gilford-----	---	---	---	---	---	High	High	Moderate
HfbAN: Henrietta, drained-----	---	---	---	3-6	6-12	High	High	Moderate

Table 20.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness	Initial	Total		Uncoated steel	Concrete
		In		In	In			
HfbAU: Henrietta, undrained-----	---	---	---	2-4	25-32	High	High	Moderate
HkkA: Hillsdale-----	---	---	---	---	---	Moderate	Low	High
HkkB: Hillsdale-----	---	---	---	---	---	Moderate	Low	High
HknC2: Hillsdale-----	---	---	---	---	---	Moderate	Low	High
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
HknD2: Hillsdale-----	---	---	---	---	---	Moderate	Low	High
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
HkpC2: Hillsdale-----	---	---	---	---	---	Moderate	Low	High
Tracy-----	---	---	---	---	---	Moderate	Low	Moderate
HkpD2: Hillsdale-----	---	---	---	---	---	Moderate	Low	High
Tracy-----	---	---	---	---	---	Moderate	Low	Moderate
HtbAN: Houghton, drained	---	---	---	6-18	55-60	High	High	Moderate
HtbAU: Houghton, undrained-----	---	---	---	6-18	55-60	High	High	Moderate
JaaAK: Jamestown-----	Dense material	42-70	Weakly cemented	---	---	High	High	Low
MfaA: Martinsville-----	---	---	---	---	---	Moderate	Moderate	Moderate
MfaB2: Martinsville-----	---	---	---	---	---	Moderate	Moderate	Moderate
MfaC2: Martinsville-----	---	---	---	---	---	Moderate	Moderate	Moderate
MfrAN: Madaus, drained--	Strongly contrasting textural stratification	17-56	---	2-4	5-9	High	High	Low
MfrAU: Madaus, undrained	Strongly contrasting textural stratification	17-56	---	2-4	5-9	High	High	Low

Table 20.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness	Initial	Total		Uncoated steel	Concrete
		In		In	In			
MgcA: Maumee-----	---	---	---	---	---	Moderate	High	Moderate
MgdAN: Martisco, drained	---	---	---	4-12	19-24	High	High	High
MhaA: Maumee-----	---	---	---	---	---	Moderate	High	Moderate
MhbA: Maumee-----	---	---	---	---	---	Moderate	High	Moderate
MmbC2: Miami-----	Dense material	24-40	Weakly cemented	---	---	Moderate	Moderate	Moderate
MmdC3: Miami-----	Dense material	24-40	Weakly cemented	---	---	Moderate	Moderate	Moderate
MmdD3: Miami-----	Dense material	24-40	Weakly cemented	---	---	Moderate	Moderate	Moderate
MouA: Milford-----	---	---	---	---	---	High	High	Low
MsaA: Mishawaka-----	---	---	---	---	---	Low	Low	Moderate
MtsB2: Morley-----	Dense material	20-40	---	---	---	High	Moderate	Moderate
MtsC2: Morley-----	Dense material	20-40	---	---	---	High	Moderate	Moderate
MubD3: Morley-----	Dense material	20-40	---	---	---	High	Moderate	Moderate
MvhAN: Moston, drained--	---	---	---	6-12	15-24	High	Moderate	Moderate
MvhAU: Moston, undrained	---	---	---	6-12	15-24	High	Moderate	Moderate
MvkA: Morocco-----	---	---	---	---	---	Moderate	Low	High
MwzAN: Muskego, drained-	---	---	---	10-15	25-30	High	Moderate	Moderate
MwzAU: Muskego, undrained-----	---	---	---	10-15	25-30	High	Moderate	Moderate
OkrA: Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
OkrB: Oshtemo-----	---	---	---	---	---	Moderate	Low	Low

Table 20.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness	Initial	Total		Uncoated steel	Concrete
		In		In	In			
OkrC2: Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
OkrD: Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
OlcA: Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
OlcB: Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
OlcC2: Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
OlcD: Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
OmgA: Osolo-----	---	---	---	---	---	Low	Low	Moderate
PaaAN: Palms, drained---	---	---	---	2-4	25-32	High	High	Moderate
PaaAU: Palms, undrained-	---	---	---	2-4	25-32	High	High	Moderate
Pmg: Pits, gravel.								
PxlA: Psammaquents.								
Pxo: Psammments.								
QuiA: Quinn-----	---	---	---	---	---	High	High	High
QujA: Quinn-----	---	---	---	---	---	High	High	High
RenA: Rensselaer-----	---	---	---	---	---	High	Moderate	Low
ReyA: Rensselaer-----	---	---	---	---	---	High	Moderate	Low
RopA: Riddles-----	---	---	---	---	---	Moderate	Moderate	Moderate
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
RopB: Riddles-----	---	---	---	---	---	Moderate	Moderate	Moderate
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
RopC2: Riddles-----	---	---	---	---	---	Moderate	Moderate	Moderate
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low

Table 20.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness	Initial	Total		Uncoated steel	Concrete
		In		In	In			
RopD2: Riddles-----	---	---	---	---	---	Moderate	Moderate	Moderate
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
RoqB: Riddles-----	---	---	---	---	---	Moderate	Moderate	Moderate
Metea-----	---	---	---	---	---	Moderate	Moderate	Moderate
RoqC2: Riddles-----	---	---	---	---	---	Moderate	Moderate	Moderate
Metea-----	---	---	---	---	---	Moderate	Moderate	Moderate
RoqD2: Riddles-----	---	---	---	---	---	Moderate	Moderate	Moderate
Metea-----	---	---	---	---	---	Moderate	Moderate	Moderate
SdzA: Selfridge-----	---	---	---	---	---	High	High	Low
Crosier-----	Dense material	24-40	Weakly cemented	---	---	High	High	Low
SdzaB: Selfridge-----	---	---	---	---	---	High	High	Low
Brems-----	---	---	---	---	---	Low	Low	High
SesA: Schoolcraft-----	---	---	---	---	---	Moderate	Low	Moderate
Sn1A: Southwest-----	---	---	---	---	---	High	High	Low
TmpA: Tracy-----	---	---	---	---	---	Moderate	Moderate	High
TmpB: Tracy-----	---	---	---	---	---	Moderate	Moderate	High
TmpC2: Tracy-----	---	---	---	---	---	Moderate	Moderate	High
TmpD: Tracy-----	---	---	---	---	---	Moderate	Moderate	High
TnwA: Troxel-----	---	---	---	---	---	High	Low	Low
TxuA: Tyner-----	---	---	---	---	---	Low	Low	High
TxuB: Tyner-----	---	---	---	---	---	Low	Low	High
TxuC: Tyner-----	---	---	---	---	---	Low	Low	High
TxuD: Tyner-----	---	---	---	---	---	Low	Low	High

Table 20.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness	Initial	Total		Uncoated steel	Concrete
		In		In	In			
TxuF: Tyner-----	---	---	---	---	---	Low	Low	High
Uam: Udorthents, loamy								
UdeA: Urban land.								
Bainter-----	---	---	---	---	---	Moderate	Low	Moderate
UdeB: Urban land.								
Bainter-----	---	---	---	---	---	Moderate	Low	Moderate
UdeC: Urban land.								
Bainter-----	---	---	---	---	---	Moderate	Low	Moderate
UdkA: Urban land.								
Brady-----	Strongly contrasting textural stratification	40-70	---	---	---	High	Low	Moderate
UdzA: Urban land.								
Auten-----	Strongly contrasting textural stratification	20-35	---	---	---	High	High	High
UeaA: Urban land.								
Crosier-----	Dense material	24-40	Weakly cemented	---	---	High	High	Low
UeqA: Urban land.								
Gilford-----	---	---	---	---	---	High	High	Moderate
UewA: Urban land.								
Brems-----	---	---	---	---	---	Low	Low	High
Morocco-----	---	---	---	---	---	Moderate	Low	High
UfbA: Urban land.								
Brookston-----	---	---	---	---	---	High	High	Low

Table 20.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness	Initial	Total		Uncoated steel	Concrete
		In		In	In			
UfhA: Urban land.								
Coloma-----	---	---	---	---	---	Low	Low	Moderate
UfhB: Urban land.								
Coloma-----	---	---	---	---	---	Low	Low	Moderate
UfhC: Urban land.								
Coloma-----	---	---	---	---	---	Low	Low	Moderate
UfmA: Urban land.								
Coupee-----	Strongly contrasting textural stratification	30-40	---	---	---	Moderate	Moderate	High
UfrA: Urban land.								
Del Rey-----	---	---	---	---	---	High	High	Moderate
UftA: Urban land.								
Elston-----	---	---	---	---	---	Moderate	Low	Moderate
UfzA: Urban land.								
Mishawaka-----	---	---	---	---	---	Low	Low	Moderate
UgaA: Urban land.								
Morocco-----	---	---	---	---	---	Moderate	Low	High
UglA: Urban land.								
Osolo-----	---	---	---	---	---	Low	Low	Moderate
UgrA: Urban land.								
Rensselaer-----	---	---	---	---	---	High	Moderate	Low
UgsA: Urban land.								
Riddles-----	---	---	---	---	---	Moderate	Moderate	Moderate
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low



Table 20.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness	Initial	Total		Uncoated steel	Concrete
		In		In	In			
UgsB: Urban land.								
Riddles-----	---	---	---	---	---	Moderate	Moderate	Moderate
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
UgvA: Urban land.								
Tyner-----	---	---	---	---	---	Low	Low	High
UgvB: Urban land.								
Tyner-----	---	---	---	---	---	Low	Low	High
UgvC: Urban land.								
Tyner-----	---	---	---	---	---	Low	Low	High
UgvD: Urban land.								
Tyner-----	---	---	---	---	---	Low	Low	High
UhmA: Urban land.								
Hillsdale-----	---	---	---	---	---	Moderate	Low	High
UhmB: Urban land.								
Hillsdale-----	---	---	---	---	---	Moderate	Low	High
UhoC: Urban land.								
Hillsdale-----	---	---	---	---	---	Moderate	Low	High
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
UhoD: Urban land.								
Hillsdale-----	---	---	---	---	---	Moderate	Low	High
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
UhpC: Urban land.								
Hillsdale-----	---	---	---	---	---	Moderate	Low	High
Tracy-----	---	---	---	---	---	Moderate	Low	Moderate

Table 20.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
		to top						
		In		In	In			
UhpD: Urban land.								
Hillsdale-----	---	---	---	---	---	Moderate	Low	High
Tracy-----	---	---	---	---	---	Moderate	Low	Moderate
UhwA: Urban land.								
Martinsville----	---	---	---	---	---	Moderate	Moderate	Moderate
UhwB: Urban land.								
Martinsville----	---	---	---	---	---	Moderate	Moderate	Moderate
UhwC: Urban land.								
Martinsville----	---	---	---	---	---	Moderate	Moderate	Moderate
UkaA: Urban land.								
Maumee-----	---	---	---	---	---	Moderate	High	Moderate
UkeA: Urban land.								
Milford-----	---	---	---	---	---	High	High	Low
UkxA: Urban land.								
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
UkxB: Urban land.								
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
UkxC: Urban land.								
Oshtemo-----	---	---	---	---	---	Moderate	Low	Low
UmfB: Urban land.								
Riddles-----	---	---	---	---	---	Moderate	Moderate	Moderate
Metea-----	---	---	---	---	---	Moderate	Moderate	Moderate
UmfC: Urban land.								
Riddles-----	---	---	---	---	---	Moderate	Moderate	Moderate
Metea-----	---	---	---	---	---	Moderate	Moderate	Moderate

Table 20.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness	Initial	Total		Uncoated steel	Concrete
		In		In	In			
UmfD: Urban land.								
Riddles-----	---	---	---	---	---	Moderate	Moderate	Moderate
Metea-----	---	---	---	---	---	Moderate	Moderate	Moderate
UmpA: Urban land.								
Schoolcraft-----	---	---	---	---	---	Moderate	Low	Moderate
UmuA: Urban land.								
Southwest-----	---	---	---	---	---	High	High	Low
UmwA: Urban land.								
Tracy-----	---	---	---	---	---	Moderate	Moderate	High
UmwB: Urban land.								
Tracy-----	---	---	---	---	---	Moderate	Moderate	High
UmwC: Urban land.								
Tracy-----	---	---	---	---	---	Moderate	Moderate	High
UmwD: Urban land.								
Tracy-----	---	---	---	---	---	Moderate	Moderate	High
UmxA: Urban land.								
Troxel-----	---	---	---	---	---	High	Low	Low
UnoA: Urban land.								
Whitaker-----	---	---	---	---	---	High	High	Moderate
UnqB: Urban land.								
Williamstown-----	Dense material	20-40	Weakly cemented	---	---	Moderate	Moderate	Moderate
Crosier-----	Dense material	24-40	Weakly cemented	---	---	High	High	Low
UntA: Urban land.								
Wunabuna, drained	---	---	---	0	2-10	High	Moderate	Low

Table 20.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Hardness	Initial	Total		Uncoated steel	Concrete
		In		In	In			
Usl: Udorthents, rubbish.								
W: Water.								
WcnAI: Waterford-----	---	---	---	---	---	High	Moderate	Low
WoaA: Williamstown-----	Dense material	20-40	Weakly cemented	---	---	Moderate	Moderate	Moderate
WoaB2: Williamstown-----	Dense material	20-40	Weakly cemented	---	---	Moderate	Moderate	Moderate
WoaC2: Williamstown-----	Dense material	20-40	Weakly cemented	---	---	Moderate	Moderate	Moderate
WobB: Williamstown-----	Dense material	20-40	Weakly cemented	---	---	Moderate	Moderate	Moderate
Crosier-----	Dense material	24-40	Weakly cemented	---	---	High	High	Low
WrxAN: Wunabuna, drained	---	---	---	0	2-10	High	Moderate	Low
WtbA: Whitaker-----	---	---	---	---	---	High	High	Moderate
WujB: Williamstown-----	Dense material	20-40	Weakly cemented	---	---	Moderate	Moderate	Moderate
Moon-----	---	---	---	---	---	Moderate	Moderate	Moderate

Table 21.--Classification of the Soils

Soil name	Family or higher taxonomic class
Abscota-----	Mixed, mesic Oxyaquic Udipsamments
Ackerman-----	Sandy, mixed, mesic Histic Humaquepts
Adrian-----	Sandy or sandy-skeletal, mixed, euic, mesic Terric Haplosaprists
Antung-----	Sandy, mixed, mesic Histic Humaquepts
Auten-----	Fine-loamy over sandy or sandy-skeletal, mixed, active, mesic Aquollic Hapludalfs
Bainter-----	Coarse-loamy, mixed, semiactive, mesic Mollic Hapludalfs
Baugo-----	Fine-loamy, mixed, active, mesic Aeris Epiaqualfs
Blount-----	Fine, illitic, mesic Aeris Epiaqualfs
Brady-----	Coarse-loamy, mixed, active, mesic Aquollic Hapludalfs
Brems-----	Mixed, mesic Aquic Udipsamments
Brookston-----	Fine-loamy, mixed, superactive, mesic Typic Argiaquolls
Cohoctah-----	Coarse-loamy, mixed, active, mesic Fluvaquentic Endoaquolls
Coloma-----	Mixed, mesic Lamellic Udipsamments
Coupee-----	Fine-loamy over sandy or sandy-skeletal, mixed, active, mesic Ultic Hapludalfs
Crosier-----	Fine-loamy, mixed, active, mesic Aeris Epiaqualfs
Crumstown-----	Coarse-loamy, mixed, active, mesic Typic Hapludalfs
Del Rey-----	Fine, illitic, mesic Aeris Epiaqualfs
Edselton-----	Marly, euic, mesic Limnic Haplosaprists
Edwards-----	Marly, euic, mesic Limnic Haplosaprists
Elston-----	Coarse-loamy, mixed, active, mesic Typic Argiudolls
Gilford-----	Coarse-loamy, mixed, superactive, mesic Typic Endoaquolls
Henrietta-----	Coarse-loamy, mixed, superactive, nonacid, mesic Histic Humaquepts
Hillsdale-----	Coarse-loamy, mixed, active, mesic Typic Hapludalfs
Houghton-----	Euic, mesic Typic Haplosaprists
Jamestown-----	Fine-loamy, mixed, superactive, nonacid, mesic Aeris Epiaquepts
Madaus-----	Coarse-silty over sandy or sandy-skeletal, carbonatic over mixed, mesic Histic Humaquepts
Martinsville-----	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Martisco-----	Fine-silty, carbonatic, mesic Histic Humaquepts
Maumee-----	Sandy, mixed, mesic Typic Endoaquolls
Metea-----	Loamy, mixed, active, mesic Arenic Hapludalfs
Miami-----	Fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs
Milford-----	Fine, mixed, superactive, mesic Typic Endoaquolls
Mishawaka-----	Sandy, mixed, mesic Typic Hapludolls
Moon-----	Fine-loamy, mixed, active, mesic Oxyaquic Hapludalfs
Morley-----	Fine, illitic, mesic Oxyaquic Hapludalfs
Morocco-----	Mixed, mesic Aquic Udipsamments
Moston-----	Coprogenous, euic, mesic Limnic Haplosaprists
Muskego-----	Coprogenous, euic, mesic Limnic Haplosaprists
Oshtemo-----	Coarse-loamy, mixed, active, mesic Typic Hapludalfs
Osolo-----	Mixed, mesic Typic Udipsamments
Palms-----	Loamy, mixed, euic, mesic Terric Haplosaprists
Psammaquents-----	Psammaquents
Psammaquents-----	Psammaquents
Quinn-----	Coarse-loamy, mixed, active, mesic Typic Endoaqualfs
Rensselaer-----	Fine-loamy, mixed, superactive, mesic Typic Argiaquolls
Riddles-----	Fine-loamy, mixed, active, mesic Typic Hapludalfs
Schoolcraft-----	Fine-loamy, mixed, superactive, mesic Typic Argiudolls
Selfridge-----	Loamy, mixed, active, mesic Aquic Arenic Hapludalfs
Southwest-----	Fine-silty, mixed, superactive, nonacid, mesic Typic Fluvaquents
Tracy-----	Coarse-loamy, mixed, active, mesic Ultic Hapludalfs
Troxel-----	Fine-silty, mixed, superactive, mesic Pachic Argiudolls
Tyner-----	Mixed, mesic Typic Udipsamments
Udorthents, loamy-----	Udorthents
Waterford-----	Coarse-loamy, mixed, active, mesic Fluvaquentic Eutrodepts
Whitaker-----	Fine-loamy, mixed, active, mesic Aeris Endoaqualfs
Williamstown-----	Fine-loamy, mixed, active, mesic Aquic Hapludalfs
Wunabuna-----	Fine, mixed, superactive, nonacid, mesic Fluvaquentic Endoaquepts